DOCUMENT 00 91 01

ADDENDUM NO. 1

GENERAL

This document includes requirements that clarify or supersede portions of the bid and/or contract requirements for the project. This Addendum is a Contract Document.

SUMMARY

The following changes, additions and deletions shall be made to the following document(s); all other conditions shall remain the same.

Bid Questions & Responses

1. Question: 2.1 In item #4 calls out for include allowances of 2000 Board Feet of Dry rot repair which is fine for structural members but plywood is measured by the SF or MSF. It is more likely that the roof plywood is rotten than structural members, therefore is there a "guesstimate" for the SF of roof plywood to replace? Please consider modifying the bid form.

   Response: There is no guess. The allowance is in place because this is an unknown condition. The function of the allowance is to address unforeseen conditions, if they arise. If plywood needs to be replaced, the board feet cost can be converted into square feet.

2. Question: Section 00 45 46.09 – Buy American Certificate: 3.1 Is this a mandatory requirement of this job i.e. "Buy American" products and /or will any other paperwork be required?

   Response: There is no guess. The allowance is in place because this is an unknown condition. The function of the allowance is to address unforeseen conditions, if they arise. If plywood needs to be replaced, the board feet cost can be converted into square feet.

3. Question: Confirm Project Allowances.

   Response: There are no alternates. Updated bid form is attached.

Please see attached Addendum #1 information from DTA Architecture, Inc. dated 04-20-17

Formal Bids Due: **April 25, 2017 by 2:00 p.m.**

END OF DOCUMENT

DOCUMENT 00 41 13

BID FORM AND PROPOSAL

To: Governing Board of East Side Union High School District ("District" or "Owner")

From: _____
(Proper Name of Bidder)

The undersigned declares that Bidder has read and understands the Contract Documents, including, without limitation, the Notice to Bidders and the Instructions to Bidders, and agrees and proposes to furnish all necessary labor, materials, and equipment to perform and furnish all work in accordance with the terms and conditions of the Contract Documents, including, without limitation, the Drawings and Specifications of Bid No. B-29-16-17.

PROJECT: IH Bld J Modernization

("Project" or "Contract") and will accept in full payment for that Work the following total lump sum amount, all taxes included:

ITEM	DESCRIPTION	UNIT	TOTAL
1.	All work described in Contract Documents for Building J Includes all overhead and profit.	**Lump Sum**	$
2.	All Abatement Work as described in Contract Document for Bld J. Includes all overhead and profit.	**Lump Sum**	$
3.	All Site Work as described in Contract Documents. Includes all overhead and profit.	**Lump Sum**	$
4.	Allowance: for potential dryrot repairs based upon 2000 Board Feet (BF). Includes all overhead and profit. Unused allowance to be returned to District at conclusion of contract.	**$ BF**	$
5.	**Total Bid Amount (Sum of Items 1 – 4)**		$

_____ dollars $ _____

BASE BID

Bidder acknowledges and agrees that the Base Bid accounts for any and all Allowance(s), Total Cost for Unit Prices, and OCIP excluded costs.

Additive/Deductive Alternates: N/A

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

1. The undersigned acknowledges receipt of Document 00 73 16.13 describing the OCIP Insurance Program the District is implementing in connection with the Project and the Work. The undersigned represents as follows:

a. The insurance coverages to be provided by the OCIP have been understood by the undersigned.
Initials_____

b. As required by document 00 73 16.13, the cost of the insurance coverages to be provided by the OCIP has been excluded from the Base Bid.
Initials_____

c. The undersigned is able to substantiate, upon award of the contract, the insurance costs excluded from the Base Bid.
Initials_____

2. The undersigned has reviewed the Work outlined in the Contract Documents and fully understands the scope of Work required in this Proposal, understands the construction and project management function(s) is described in the Contract Documents, and that each Bidder who is awarded a contract shall be in fact a prime contractor, not a subcontractor, to the District, and agrees that its Proposal, if accepted by the District, will be the basis for the Bidder to enter into a contract with the District in accordance with the intent of the Contract Documents.

3. The undersigned has notified the District in writing of any discrepancies or omissions or of any doubt, questions, or ambiguities about the meaning of any of the Contract Documents, and has contacted the Construction Manager before bid date to verify the issuance of any clarifying Addenda.

4. The undersigned agrees to commence work under this Contract on the date established in the Contract Documents and to complete all work within the time specified in the Contract Documents.

5. The liquidated damages clause of the General Conditions and Agreement is hereby acknowledged.

6. It is understood that the District reserves the right to reject this bid and that the bid shall remain open to acceptance and is irrevocable for a period of ninety (90) days.

7. The following documents are attached hereto:

- Bid Bond on the District's form or other security
- Designated Subcontractors List
- Site Visit Certification
- Non-Collusion Declaration
- Iran Contracting Act Certification
- OCIP Insurance forms

8. Receipt and acceptance of the following Addenda is hereby acknowledged:

No. _____, Dated _____	No. _____, Dated _____
No. _____, Dated _____	No. _____, Dated _____
No. _____, Dated _____	No. _____, Dated _____

9. Bidder acknowledges that the license required for performance of the Work is a _____ _____ license.

10. The undersigned hereby certifies that Bidder is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the Work.

11. Bidder specifically acknowledges and understands that if it is awarded the Contract, that it shall perform the Work of the Project while complying with all requirements of the Department of Industrial Relations [and with all requirements of the Project Labor Agreement].

12. Bidder specifically acknowledges and understands that if it is awarded the Contract, that it shall perform the Work of the Project while complying with the Davis Bacon Act, applicable reporting requirements, and any and all other applicable requirements for federal funding. If a conflict exists, the more stringent requirement shall control.

13. The Bidder represents that it is competent, knowledgeable, and has special skills with respect to the nature, extent, and inherent conditions of the Work to be performed. Bidder further acknowledges that there are certain peculiar and inherent conditions existent in the construction of the Work that may create, during the Work, unusual or peculiar unsafe conditions hazardous to persons and property.

14. Bidder expressly acknowledges that it is aware of such peculiar risks and that it has the skill and experience to foresee and to adopt protective measures to adequately and safely perform the Work with respect to such hazards.

15. Bidder expressly acknowledges that it is aware that if a false claim is knowingly submitted (as the terms "claim" and "knowingly" are defined in the California False Claims Act, Gov. Code, § 12650 et seq.), the District will be entitled to civil remedies set forth in the California False Claim Act. It may also be considered fraud and the Contractor may be subject to criminal prosecution.

16. The undersigned Bidder certifies that it is, at the time of bidding, and shall be throughout the period of the Contract, licensed by the State of California to do the type of work required under the terms of the Contract Documents and registered as a public works contractor with the Department of Industrial Relations. Bidder further certifies that it is regularly engaged in the general class and type of work called for in the Contract Documents.

Furthermore, Bidder hereby certifies to the District that all representations, certifications, and statements made by Bidder, as set forth in this bid form, are true and correct and are made under penalty of perjury.

Dated this _____ day of _____ 20 ____

Name of Bidder: _____

Type of Organization: _____

Signed by: _____

Title of Signer: _____

Address of Bidder: _____

Taxpayer Identification No. of Bidder: _____

Telephone Number: _____

Fax Number: _____

E-mail: _____ Web Page: _____

Contractor's License No(s): No.: _____ Class: _____ Expiration Date: _____

No.: _____ Class:_____ Expiration Date: _____

No.: _____ Class:_____ Expiration Date: _____

Public Works Contractor Registration No.: _____

END OF DOCUMENT

Addendum **01**

Dreiling Terrones Architecture Inc.
1103 Juanita Avenue
Burlingame California 94010

To:
All Plan Holders

		Addendum Issue Date:	**04/20/2017**
		Text	46Page
Project Name	**Building J Classroom Modernization**	Drawings	4Page
Architect's Project #	**1504-IPS**	Total Pages, including this page:	47 Pages
District:	East Side Union High School District	Distributed Via:	Email

The information contained herein is issued as Addendum to the Bid Documents for the subject Project as listed above. All information included herein shall become a part of the Bid Documents for that Project.

All bidders are required to acknowledge this Addendum on their Proposal Documents. Failure to acknowledge receipt of this Addendum shall deem the Proposal unresponsive and the proposal shall be disqualified.

Addendum Contents

Item	Reference	Subject	Type
	Architectural		
	Specification	Added Spec for 2-3/4" insulated translucent fiberglass sandwich panel wall system	
	Specification	Added Spec for suspended acoustical tile ceiling	
	Specification	Section 101116 is part of the project, however not shown in the table of contents	
	Specification	Section 0100 is part of the project, however not shown in the table of contents	
	Specification	Section 102113.19 is part of project, however not shown in the table of contents	
	Specification	Section 099100 is part of project, however not shown in the table of contents	
	Specification	Spec for exterior cement plaster attached	
	Specification	Section 101400 signage as specified is per District standards	
	A2.1	Keynote 9.11 and 9.17 does not apply to this project. Please disregard	
	A2.1	Added Roof access platform in custodial room (J003) see attached sketch.	
	A2.1	Roof access ladder as shown in A2.1 and detail 7/A7.1 to be: Model 500 as manufactured by O'Keeffe's Inc. Standard Duty Channel Rail.	
	A2.2	Refer attached cut sheet for suspended ceiling light fixture to be installed in the (2) conference rooms (J010, J015) and office (J002)	
	A3.0	Remove wall mounted attic vents in mechanical well. Provide new siding material to match existing, at vent hole locations. Total of (3) locations	
	A3.0	Bidders are responsible for obseriving and verifying all (E) roof conditions for new installations	
	A7.2	Refer to structural drawing for details of new curb where occurs	
	Plumbing	Refer to sheet P0.2 detail 10 for condensate piping from the HVAC units	
	P2.0	Refer to P0.1 for plumbing legend	
	P2.4	Refer to R7.3 for roof drain	
	Mechanical	Revised spec section 237413	
	Mechanical	Added spec section 230900	

Date: 04/20/2017
Project: 1504-IPS

L3.0 Refer to Spec 055000 for ornamental fence and gate information

Ornament A new “Pegasus” statue shall be purchased and installed by contractor. Attach with (4) 5/8”x4” Hilti expansion anchors at each leg. Coordinate exact location in field with District and Architect

Item # A 0066
Poor Mans Bronze
824 N State Highway 49-88
Jackson, CA 95642
1-209-257-1400

Issued: **04/20/207**

Issued by: Dreiling Terrones Architecture, Inc.
Wayne Lin

cc: Bid List
District
File

END

Date: 04/20/2017
Project: 1504-IPS

L3.0 Refer to Spec 055000 for ornamental fence and gate information

Ornament A new “Pegasus” statue shall be purchased and installed by contractor. Attach with (4) 5/8”x4” Hilti expansion anchors at each leg. Coordinate exact location in field with District and Architect

Item # A 0066
Poor Mans Bronze
824 N State Highway 49-88
Jackson, CA 95642
1-209-257-1400

Issued: **04/20/207**

Issued by: Dreiling Terrones Architecture, Inc.
Wayne Lin

cc: Bid List
District
File

END

Date: 04/20/2017
Project: 1504-IPS

L3.0 Refer to Spec 055000 for ornamental fence and gate information

Ornament A new “Pegasus” statue shall be purchased and installed by contractor. Attach with (4) 5/8”x4” Hilti expansion anchors at each leg. Coordinate exact location in field with District and Architect

Item # A 0066
Poor Mans Bronze
824 N State Highway 49-88
Jackson, CA 95642
1-209-257-1400

Issued: **04/20/207**

Issued by: Dreiling Terrones Architecture, Inc.
Wayne Lin

cc: Bid List
District
File

END

SECTION 08 45 23

2-3/4" INSULATED TRANSLUCENT FIBERGLASS SANDWICH PANEL WALL SYSTEM

- GENERAL

SUMMARY

Section includes the insulated translucent sandwich panel system and accessories as shown and specified. Work includes providing and installing:

__Flat _ factory prefabricated structural insulated translucent sandwich panels
Aluminum installation system
Aluminum sill flashing

Related Sections:

Structural Steel/Concrete/Rough Carpentry: Section 051200
Flashing and Sheet Metal: Section 071500
Sealants: Section 079000

SUBMITTALS

Submit manufacturer's product data. Include construction details, material descriptions, profiles and finishes of components.

Submit shop drawings. Include elevations and details.

Submit manufacturer's color charts showing the full range of colors available for factory-finished aluminum.

When requested, submit samples for each exposed finish required, in same thickness and material indicated for the work and in size indicated below. If finishes involve normal color variations, include sample sets consisting of two or more units showing the full range of variations expected.

Sandwich panels: 14" x 28" units
Factory finished aluminum: 5" long sections

Submit Installer Certificate, signed by installer, certifying compliance with project qualification requirements.

Submit product reports from a qualified independent testing agency indicating each type and class of panel system complies with the project performance requirements, based on comprehensive testing of current products. Previously completed reports will be acceptable if for current manufacturer and indicative of products used on this project.

Reports required are:

International Building Code Evaluation Report
Flame Spread and Smoke Developed (UL 723) – Submit UL Card
Burn Extent (ASTM D 635)
Color Difference (ASTM D 2244)
Impact Strength (UL 972)
Bond Tensile Strength (ASTM C 297 after aging by ASTM D 1037)
Bond Shear Strength (ASTM D 1002)
Beam Bending Strength (ASTM E 72)
Insulation U-Factor (NFRC 100)

NFRC System U-Factor Certification (NFRC 700)
Solar Heat Gain Coefficient (NFRC or Calculations)
Condensation Resistance Factor (AAMA 1503)
Air Leakage (ASTM E 283)
Structural Performance (ASTM E 330)
Water Penetration (ASTM E 331)
1200°F Fire Resistance (SWRI)

QUALITY ASSURANCE

Manufacturer's Qualifications

Material and products shall be manufactured by a company continuously and regularly employed in the manufacture of specified materials for a period of at least ten consecutive years and which can show evidence of those materials being satisfactorily used on at least six projects of similar size, scope and location. At least three of the projects shall have been in successful use for ten years or longer.
Panel system must be listed by an ANSI accredited Evaluation Service, which requires quality control inspections and fire, structural and water infiltration testing of sandwich panel systems by an accredited agency.
Quality control inspections shall be conducted at least once each year and shall include manufacturing facilities, sandwich panel components and production sandwich panels for conformance with AC177 “Translucent Fiberglass Reinforced Plastic (FRP) Faced Panel Wall, Roof and Skylight Systems” as issued by the ICC-ES.

Installer’s Qualifications: Installation shall be by an experienced installer, which has been in the business of installing specified panel systems for at least two consecutive years and can show evidence of satisfactory completion of projects of similar size, scope and type.

PERFORMANCE REQUIREMENTS

The manufacturer shall be responsible for the configuration and fabrication of the complete panel system.

When requested, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
Standard panel system shall have less than 0.01 cfm/ft^2 air leakage by ASTM E 283 at 6.24 PSF (50 mph) and no water penetration by ASTM E 331 at 15 PSF; and structural testing by ASTM E 330.
Structural Loads; Provide system capable of handling the following loads:

Positive Wind Load: _____ PSF
Negative Wind Load: _____ PSF
Seismic Design Criteria (where applicable): _____

DELIVERY STORAGE AND HANDLING

Deliver panel system, components and materials in manufacturer's standard protective packaging.

Store panels on the long edge; several inches above the ground, blocked and under cover in accordance with manufacturer's storage and handling instructions.

WARRANTY

Submit manufacturer's and installer's written warranty agreeing to repair or replace panel system work, which fails in materials or workmanship within one year of the date of delivery. Failure of

materials or workmanship shall include leakage, excessive deflection, deterioration of finish on metal in excess of normal weathering, defects in accessories, insulated translucent sandwich panels and other components of the work.

Extended Warranty: consult manufacture

- PRODUCTS

MANUFACTURER

The basis for this specification is for products manufactured by Kalwall Corporation. Other manufacturers may bid this project provided they comply with all of the performance requirements of this specification and submit evidence thereof. Listing other manufacturers' names in this specification does not constitute approval of their products or relieve them of compliance with all the performance requirements contained herein.

Kalwall Corporation, Tel: (800) 258-9777 – Fax: (603) 627-7905 – Email: info@kalwall.com

PANEL COMPONENTS

Face Sheets

Translucent faces: Manufactured from glass fiber reinforced thermoset resins, formulated specifically for architectural use.

Thermoplastic (e.g. polycarbonate, acrylic) faces are not acceptable.
Face sheets shall not deform, deflect or drip when subjected to fire or flame.

Interior face sheets:

Flame spread: Underwriters Laboratories (UL) listed, which requires periodic unannounced retesting, with flame spread rating no greater than 25 and smoke developed no greater than 250 when tested in accordance with UL 723.
Burn extent by ASTM D 635 shall be no greater than 1".

Exterior face sheets:

Color stability: Full thickness of the exterior face sheet shall not change color more than 3 CIE Units DELTA E by ASTM D 2244 after 5 years outdoor South Florida weathering at 5° facing south, determined by the average of at least three white samples with and without a protective film or coating to ensure long-term color stability. Color stability shall be unaffected by abrasion or scratching.
Strength: Exterior face sheet shall be uniform in strength, impenetrable by hand held pencil and repel an impact minimum of 70 ft. lbs. without fracture or tear when impacted by a 3-1/4" diameter, 5 lb. free-falling ball per UL 972.

Appearance:

Exterior face sheets: Smooth 0.070 thick and Crystal in color.
Interior face sheets: Smooth 0.045 thick and white in color.
Face sheets shall not vary more than ± 10% in thickness and be uniform in color.

Grid Core

Aluminum I-beam grid core shall be of 6063-T6 or 6005-T5 alloy and temper with provisions for mechanical interlocking of muntin-mullion and perimeter. Width of I-beam shall be no less than 7/16".

I-beam Thermal break: Minimum 1", thermoset fiberglass composite.

Laminate Adhesive

Heat and pressure resin type adhesive engineered for structural sandwich panel use, with minimum 25-years field use. Adhesive shall pass testing requirements specified by the International Code Council "Acceptance Criteria for Sandwich Panel Adhesives".
Minimum tensile strength of 750 PSI when the panel assembly is tested by ASTM C 297 after two exposures to six cycles each of the aging conditions prescribed by ASTM D 1037.
Minimum shear strength of the panel adhesive by ASTM D 1002 after exposure to four separate conditions:

50% Relative Humidity at 68° F: 540 PSI
182° F: 100 PSI
Accelerated Aging by ASTM D 1037 at room temperature: 800 PSI
Accelerated Aging by ASTM D 1037 at 182° F: 250 PSI

PANEL CONSTRUCTION

Provide sandwich panels of flat fiberglass reinforced translucent face sheets laminated to a grid core of mechanically interlocking I-beams. The adhesive bonding line shall be straight, cover the entire width of the I-beam and have a neat, sharp edge.

Thickness: 2-3/4"
Light transmission: 20%%
Solar heat gain coefficient _____.
Panel U-factor by NFRC certified laboratory: 2-3/4" thermally broken grid 0.23.
Complete insulated panel system shall have NFRC certified U-factor of _____.
Grid pattern: Nominal size 12x24; pattern Shoji.

Standard panels shall deflect no more than 1.9" at 30 PSF in 10' 0" span without a supporting frame by ASTM E 72.

Standard panels shall withstand 1200° F fire for minimum one hour without collapse or exterior flaming.

Thermally broken panels: Minimum Condensation Resistance Factor of 80 by AAMA 1503 measured on the bond line.

BATTENS AND PERIMETER CLOSURE SYSTEM

Closure system: _____ extruded aluminum 6063-T6 and 6063-T5 alloy and temper clamp-tite screw type closure system.

Sealing tape: Manufacturer's standard, pre-applied to closure system at the factory under controlled conditions.

Fasteners: 300 series stainless steel screws for aluminum closures, excluding final fasteners to the building.

Finish:

Manufacturer's factory applied finish, which meets the performance requirements of AAMA 2604. Color to be _____ (selected from manufacturer's standards).
Anodized (optional) _____
Mill (optional)

- EXECUTION

EXAMINATION

A. Installer shall examine substrates, supporting structure and installation conditions.

B. Do not proceed with panel installation until unsatisfactory conditions have been corrected.

PREPARATION

Metal Protection:

Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose.
Where aluminum will contact concrete, masonry or pressure treated wood, protect against corrosion by painting contact surfaces with bituminous paint or method recommended by manufacturer.

INSTALLATION

Install the panel system in accordance with the manufacturer's suggested installation recommendations and approved shop drawings.

Anchor component parts securely in place by permanent mechanical attachment system.
Accommodate thermal and mechanical movements.
Set perimeter framing in a full bed of sealant compound, or with joint fillers or gaskets to provide weather-tight construction.

Install joint sealants at perimeter joints and within the panel system in accordance with manufacturer's installation instructions.

CLEANING

Clean the panel system interior and exterior, immediately after installation.

Refer to manufacturer's written recommendations.

END OF SECTION

SECTION 09 51 23 SUSPENDED ACOUSTICAL TILE CEILING

PART 1 - GENERAL

1.01. RELATED DOCUMENTS

A. The Drawings and general provisions of the Contract, including General and Special Conditions and Division 1, General Requirements, apply to the work specified in this section.

B. Parts 1,3,4,5,6, Title 24 of the California Code of Regulations is to be considered an integral part of this section. Items noted here are those specifically related to the General Contractor.

C. All California Prevailing Wage Laws apply to the work of this section.

1.02. WORK INCLUDED

A. The following is a general description of the work included in this section. This description does not limit the scope of work shown in the drawings nor does it relieve the Contractor of any responsibility for coordination of **ALL** work of this Contract.

Suspended Acoustic Tile Ceiling	• Manufacture and installation of extent of ceiling shown in drawings • All suspension, framing, diagonal support and accessories
Coordination	• Coordination with mechanical / electrical system for fixture placement • Coordination with all other trades for installation, interface and penetrations

1.03. RELATED WORK

A. Refer to the following sections for work specifically related to the work of this section. This information is provided for convenience and does not eliminate coordination requirements. All sections of this Project Manual and all other Contract Documents shall be considered related by the Contractor.

Division 01	• Project Management and Coordination • Construction Progress Documentation • Execution
Division 09	Gypsum Board
Division 15	Mechanical
Division 16	Electrical

1.04. SUBMITTALS

A. Provide the following submittals per the requirements of Division 1.

1. Catalog Cuts: Provide manufacturers product information for all components required for manufacture and fabrication, including but not limited to the following:
2. Samples Provide samples for initial selection purposes in form of manufacturer's color charts, actual units or sections of units, products or assemblies. Provide samples showing full range of colors, textures, and patterns available for each type of material indicated including but not limited to the following:
3. Shop Drawings: Provide shop drawings showing location of each item, dimensioned plans and elevations, installation components, accessories including but not limited to following:
4. Product Data: Provide product data for each type of product and process specified in this section and incorporated into items of architectural woodwork during fabrication, finishing, and installation:
5. Schedule Provide Schedule defining location, installation, sequence or other information including, but not limited to, the following:

Catalog Cuts	Manufacturers product information for all components required for manufacture and fabrication
Samples	Submit three sets of 12-inch-square samples for acoustic tile required. Sample submittal and Architect's review will be fore color and texture only.

	Compliance with all other requirements is the exclusive responsibility of the Contractor • Submit three samples of tile with edge trimmed to match factory edges, for cases where tiles are less than 2 feet or 4 feet as applies • Submit three 12-inch-long samples of each exposed runner and molding. Architect's review will cover color and texture only. Compliance with all other requirements is the exclusive responsibility of the Contractor
Shop Drawings	• Submit Shop Drawing details and related ceiling plans of suspension system specified in this Section • Submit compression strut details. • Show location of ceiling units and other items of work (including but not limited to pendant light fixture support points) which are to be coordinated with ceiling, and show framing and support details for work supported by the suspension system • Certify compliance with ASTM C635 and other specified requirements and indicate structural classification
Product Data	• Submit two copies of manufacturer's specifications for each acoustic tile required including certified laboratory test reports and other data as required to show compliance with these Specifications
Schedule	• N/A

1.05. REFERENCES / STANDARDS

A. The following References and Standards are incorporated into the requirements of this Section as they apply to products, assembly, manufacturing procedures and installation. References shall be utilized in determining “Industry Standards” and other acceptable manufacture and installation methods but shall not relieve the Contractor of any other responsibilities of the Contract. Where conflicts occur between multiple listed references, the Contractor shall assume that the more restrictive standard applies and shall seek determination from the Architect regarding applicable standard.

References	• Performance Data, Acoustical Materials, and Insulating, Materials Association (AIMA) Bulletin, "Performance Data Architectural Acoustical Materials". Flame-Spread Range: ASTM E84. (25) • Ceilings and support system shall comply with Division of the State Architect, Office of Regulatory Services, and the requirements of the California State Manual – refer to DSA Interpretation of Regulations Document IR 25-2.10.

1.06. QUALITY ASSURANCE

A. Provide the following per Division 1:

Supervision	• Full time supervision and observation by the Contractor of all on-site Construction Activities including ordering, procurement and delivery of all materials and products manufactured or assembled off-site.
Qualifications of Workers	• The Contractor that installs the tiles, shall install the suspension system • Minimum five years’ experience in installation of suspended tile systems and assemblies.
Product Acceptance	Design Criteria • The bracing system shall be adequate to support nonbearing partitions spaced at 10 feet on center. • Ceilings shall meet all applicable requirements and codes for the construction of public school facilities in the State of California • Suspension system shall be installed by the same contractor that installs the tiles • Edges of tile at perimeter that must be field cut to size and revealed at the perimeter shall be reviewed and accepted by the Architect. GC shall ensure the highest level of workmanship for this task. Tolerances

	• Deflection
	  ○ Suspension system components, hangers, and fastening devices supporting light fixtures, ceiling grilles, and acoustical units: Maximum deflection: 1/360 of span
	  ○ Deflection Test: ASTM C635
	• Allowable tolerance of finished acoustical ceiling system: Level within 1/8” in 12 feet

Substrate Acceptance	• Prior to work of this section, carefully inspect the installed work of all other trades to verify that all such work is complete to the point where this installation may properly commence

1.07. QUALITY CONTROL BY CONTRACTOR

A. The following specific procedures shall be required to demonstrate adequate levels of quality provided for project components and systems. Exclusion of any item from this list does not relieve the Contractor of any responsibilities for quality procedures covered elsewhere in the Contract Documents.

Supervision	• Per Division 1
Testing	• n/a
Special Inspections	• n/a
Mock Ups	• n/a

1.08. QUALITY CONTROL BY OWNER

A. The following specific procedures shall be required to demonstrate adequate levels of quality provided for project components and systems. Exclusion of any item from this list does not relieve the Contractor of any responsibilities for quality procedures covered elsewhere in the Contract.

Observation	• Per Division 1.
Inspection	• Per CCR Title 24: Continuous Inspection by DSA Certified inspector
Testing	• Refer to DSA Testing and Inspection Sheet
Special Inspections	• Refer to DSA Testing and Inspection Sheet

1.09. COMMISSIONING

A. Provide Commissioning procedures and products per requirements of Division 1. Commissioning procedures shall include, but not be limited to, the following:

Commissioning Outline	• n/a

1.10. CLOSE OUT

A. Provide the following Close Out materials in accordance with Division 1.

Product Manuals	Maintenance and Operations instructions / manuals provided by all product / material manufacturers. •
System Manuals	Maintenance and Operations instructions / manuals provided by subcontractors for assemblies / systems. •
Maintenance Tools and materials	• Submit manufacturer's recommendations for cleaning and refinishing acoustic tile, including precautions against materials and methods which may be detrimental to finishes and acoustic efficiency
Surplus Materials	• One box of the of specified ceiling tile
Training	• n/a
Replacement Materials	• When work is completed, deliver stock of replacement materials to the Owner. Furnish full-size units matching the material installed packaged and marked for identification.

1.11. WARRANTY

A. Provide written warranty in accordance with Division 1.

Warranty Form	• Per Division 1
Warranty Period	• 1 year
Warranty Start	• Date of Substantial Completion

1.12. PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver acoustic tile to the Project site in original unopened packages bearing manufacturer's name and labeled to identify each type of acoustic unit.

B. Storage: Advise Contractors of acoustic material manufacturer's recommendations for storage of acoustic tiles to be used in the work.

C. Protect all metal suspension parts from damage.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS:

A. Suspension System: USG, Chicago Metallic, or Armstrong:

B. Acoustical Tiles: Armstrong

2.02 MATERIALS

A. Suspension System: USG Interior Donn exposed tee. 2'-0" x 4'-0" Modules. Or approved equivalent.

1. Comply with ASTM C635, C636, and E580, Section 5, as amended by 2013 CBC Section 1616A.1.16
2. Structural Classification: heavy-duty system.
3. Main and cross members: Electro galvanized cold rolled steel, double weld design with rolled steel cap.
4. Edge molding: Electro galvanized cold-rolled steel, minimum .020 inch thick steel channel or angle, minimum flange width of 9/16th inch.
5. Splices, end connections, clips and other accessories:
   a. Electro galvanized Steel.
   b. Design to provide strong, rigid, lock type connections preventing movement or displacement of joined components and permitting disassembly without damage to component parts.
6. Rough Suspension:
   a. Hanger wires and bracing wire: Minimum 12 gauge, galvanized, soft annealed, mild steel wire.
   b. Provide screw eyes and other accessories to meet state code requirements for hanging and cross bracing with wires.
   c. Exposed surfaces of components shall have factory applied semi gloss enamel finish, color as selected by architect.
7. Support Bars: Direct hung exposed grid.
8. Compression Struts: Provide Electrical Metallic Tubing (EMT) at 12'-0" o.c. maximum each way, minimum 4'-0" from walls.
   a. 0 – 4' long: 1/2" diameter
   b. 4' – 5'-2" long 3/4" diameter
   c. 5'-2" – 6'6" long 1" diameter
   d. 6'-6" – 8'-6" long 1-1/4" diameter
   e. Flatten ends neatly and provide 5/16" hole for attachment
9. Steel channel compression struts in accordance with 3.21 of DSA IR25-2.13 may be used in lieu of EMT.
10. Refer to reflected ceiling plan for locations and layout.

B. Acoustical Units:

1. 2'-0" x 4'-0" x ¾" panels

2. Manufacturer: Armstrong “Cortega 769” to match District Standard
3. General
   a. Acoustical units shall conform to FS SS-0S-1188, Type III (Mineral Fiber) class A
   b. Fire resistance: Flame spread of 25 or less (UL Label) .
   c. Refer to reflected ceiling plan for location and layout.
4. Color: White

PART 3 - EXECUTION

3.01 INSPECTION

A. Examine the conditions under which the suspended ceiling work is to be performed and notify the Architect, in writing, of any unsatisfactory conditions. Do not proceed with suspension ceiling work until unsatisfactory conditions have been corrected.

B. Consult other trades and contractors involved prior to start of ceiling work, to determine areas of potential interference. Do not start installation until interferences have been resolved.

C. Coordinate layout with other work which penetrates or is supported by ceiling suspension system

3.02 INSTALLATION

A. Suspension system: ASTM C636

B. Rough Suspension
   1. Hangers:
      a. Space hanger wire no more than 4 feet on center, each direction.
      b. Install additional hangers at ends of each suspension member, at all corners of all light fixtures, and 8 inches maximum from vertical surfaces.
      c. Do not splay wires more than 5 inches in a 4 foot vertical drop.
      d. Wrap wire a minimum three tight turns for hanger wire, and 4 tight turns for bracing wires according to state code requirements.
      e. Secure hanging wires to structure above with four way wire splays as components and to meet applicable building code requirements for lateral design. Use ¼” diameter screw eyes into bottom or sides of solid wood structural members.
   2. Main runners:
      a. Space main runners at 4 feet on center.
      b. Level and square to adjacent walls.
   3. Cross Runners
      a. Space cross runners at 2 feet on center
   4. Wall molding:
      a. Install wall molding at intersection of suspended ceiling and vertical surfaces.
      b. Miter corners where moldings intersect.
      c. Attach to vertical surface with mechanical fasteners.
   5. Provide additional diagonal lateral bracing and compression struts as shown on the drawings and as required by code to support ceiling and partitions.

C. Lay In Acoustical Units
   1. Install in grid system in accordance with manufacturer’s instructions and recommendations.
   2. Installation of tile shall not commence until the heating and ventilating system is in operation. All interior wet or dust-producing work shall be complete and dry.
   3. At completion of the work, all surfaces shall present true, level and plane surfaces. All surfaces of tile ceiling and walls shall be clean and perfectly adhered over all areas and shall present a finished appearance
   4. Provide trim molding at recessed light fixtures and HVAC registers as required.
   5. Provide hold down clips.
   6. Layout shall be approved by Architect prior to commencement of installation.
   7. Coordinate lay in system with all electrical and mechanical work to be integrated into the ceiling.

3.03 WORKMANSHIP

A. The work shall be installed by skilled workmen under experienced supervision.

3.04 ACCEPTANCE

A. Defective and Damaged Work: all chipped, nicked, scratched, soiled and otherwise defective tile and tile damaged during or after installation and prior to final acceptance of the building Project shall be removed and replaced at no additional cost to the Owner.

END OF SECTION

SECTION 09220 EXTERIOR CEMENT PLASTER

PART 1 - GENERAL

1.01. RELATED DOCUMENTS

A. The Drawings and general provisions of the Contract, including General and Special Conditions and Division 1, General Requirements, apply to the work specified in this Section.

B. Parts 1,3,4,5,6 and Title 24 of the California Code of Regulations is to be considered an integral part of this section. Items noted here are those specifically related to the General Contractor.

1.02. WORK INCLUDED

A. The following is a general description of the work included in this Section. This description does not limit the scope of work shown in the drawings nor does it relieve the Contractor of any responsibility for coordination of **ALL** work of this Contract.

Exterior Cement Plaster	• Exterior Walls at new structure
	• Incidental repair of existing plaster at adjacent buildings where utility penetrations may occur

1.03. RELATED WORK

A. Refer to the following sections for work specifically related to the work of this Section. This information is provided for convenience and does not eliminate coordination requirements. All sections of this Project Manual and all other Contract Documents shall be considered related by the Contractor.

Section 01310	Project Management and Coordination
Section 01320	Construction Progress Documentation
Section 01730	Execution
Section 06100	Rough Carpentry
Section 07900	Joint Sealers
Section 09911	Painting

1.04. SUBMITTALS

A. Provide the following submittals per the requirements of Division 1.

1. Samples: Provide samples for initial selection purposes in form of manufacturer's color charts, actual units or sections of units, products or assemblies. Provide samples showing full range of colors, textures, and patterns available for each type of material indicated including, but not limited, to the following:

Catalog Cuts	• n/a
Samples	• Submit samples of texture finish
Shop Drawings	• n/a
Product Data	• n/a
Schedule	• n/a

1.05. REFERENCES / STANDARDS

A. The following References and Standards are incorporated into the requirements of this Section as they apply to products, assembly, manufacturing procedures and installation. References shall be utilized in determining “Industry Standards” and other acceptable manufacture and installation methods, but shall not relieve the Contractor of any other responsibilities of the Contract. Where conflicts occur between multiple listed references, the Contractor shall assume that the more restrictive standard applies and shall seek determination from the Architect regarding applicable standard.

References	Lath and plaster shall meet or exceed the applicable requirements of the

2016 California Building Code and the latest edition of the following ASTM International Specifications:

- ASTM C926 Standard Specification for Application of Portland Cement-Based Plaster
- ASTM C1063 Standard Specification for Installation of Lathing and Furring to Receive Interior and Exterior Portland Cement-Based Plaster
- Fabricate vertical elements to limit finish surface to 1/240 deflection under a lateral point load of 100 LBS
- Fabricate horizontal elements to limit finish surface deflection under superimposed dead load and wind uplift loads.

1.06. QUALITY ASSURANCE

A. Provide the following per Division 1:

Supervision	• Full time supervision and observation by the Contractor of all on-site Construction Activities including ordering, procurement and delivery of all materials and products manufactured or assembled off-site.
Qualifications of Workers	• Minimum five years experience specifically with installation of exterior cement plaster.
Product Acceptance	• Architect reserves the right to reject any material not installed per current industry standards or recommended installation instructions of the Manufacturer.
Substrate Acceptance	• Installer shall fully inspect all related work by other trades prior to commencing installation of exterior cement plaster. Do not proceed unless satisfactory conditions are achieved.

1.07. QUALITY CONTROL BY CONTRACTOR

A. The following specific procedures shall be required to demonstrate adequate levels of quality provided for project components and systems. Exclusion of any item from this list does not relieve the Contractor of any responsibilities for quality procedures covered elsewhere in the Contract Documents.

Supervision	• Per Division 1
Testing	• n/a
Special Inspections	• n/a
Mock Ups	• n/a

1.08. CLOSE OUT

A. Provide the following Close Out materials in accordance with Division 1.

Product Manuals	• Maintenance and Operations instructions / manuals provided by all product / material manufacturers.
System Manuals	• Maintenance and Operations instructions / manuals provided by subcontractors for assemblies / systems.
Maintenance Tools and Materials	• n/a
Surplus Materials	• n/a
Training	• n/a

1.09. WARRANTY

A. Provide written warranty in accordance with Division 1.

Warranty Form	• Per Division 1 • Sub Contractor and manufacturer to provide warranty against defects in materials or workmanship. Replacement or repair of such defects shall be repaired or replaced in a timely fashion at no additional cost to the Owner
Warranty Period	• 1 year

Warranty Start • Date of Substantial Completion

~~1.07~~1.10. DELIVERY AND STORAGE OF MATERIALS

A. Deliver manufactured materials in their original packages and containers, bearing name of manufacturer and brand. Store cement, plaster, and lime in assigned room or area and away from damp surfaces. Remove any damaged or deteriorated materials from the site.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Building Moisture Barrier: 2 – layers, 60 minute Grade D Building Paper, ASTM D-828, as tested per ASTM E-96

~~C.~~B. Stucco Netting: Standard No. 17 gauge, 1-1/2-inch mesh, galvanized stucco lath, self furring (FS QQ-L-101C), K-Lath: 1-1/2" x 17 GA Self-furred woven stucco netting.

C. Lathing Accessories: Not less than No. 26 gauge steel, zinc-coated by Superior, Western Metal Lath, Inryco/Milcor, or Keene Furnish and install all inside and outside corner reinforcement, casing beads, base, drip, and weep screeds, strip lath, control and expansion joints, wall reveals, soffit vents, and any other accessories indicated or required to complete the installation. 7/8" typical ground size thickness.

1. Foundation sill weep screed (perforated)/stucco stop: Western Metal Lath No. 7 Foundation Weep Screed, 26 gauge-galvanized steel.
2. Control Joint: Western Metal Lath No. XJ15-3 control joint, 26 gauge galvanized steel.
3. Internal Corner Control Joint: Western Metal Lath No. 30 internal corner control joint, 26 gauge-galvanized steel.
4. Casing Bead: Western Metal Lath No. 66 Expanded Flange Casing Bend, 24 gauge, galvanized steel.
5. Soffit Vent: Superior Metal Trim "F" Mold Soffit Vent, 26 gauge, galvanized steel. 2 1/2" face opening, unless otherwise noted on the Drawings.
6. External Corner Reinforcement: Stockton "Corneraid" exterior corner reinforcing.

D. Lath Tie Wire: No. 18 gauge galvanized soft steel wire.

E. Lath Fastenings:

1. Nails for attaching stucco lath to wood framing and sheathing shall be galvanized box or roofing nails, long enough to penetrate sheathing and framing to minimum depth of 1-1/4”. At the Contractor's option, #14 or #16 gauge galvanized wire staples may be used, providing again they shall penetrate sheathing and framing to depth of 1”. Nails or staples shall securely engage the back wires of self-furring lath and penetrate framing as required for holding power. For standard or plain stucco netting, use standard furring nails, furring from ¼” to 3/8”, with minimum penetration into framing of 1-1/4”.

F. Portland Cement Plaster:

1. Thickness: Typically, unless otherwise shown, 7/8" total, scratch, brown, and finish at 3/8,” 3/8,” and 1/8" coat thickness each, respectively; proportions in accordance with ASTM C926.

PART 3 - EXECUTION

3.01 APPLICATION OF BUILDING PAPER

A. Install Building Moisture Barrier, before installing lath, over all exterior sheathing board for surfaces to receive cement plaster as follows:

1. Apply asphalt felt moisture barrier over sheathing horizontally, lapping sides 2” to weather and ends 6”. Secure sufficiently with staples to hold in place without sagging until second layer is applied. Two layers of 60 minute Grade D moisture barrier to be installed separately. Stagger joints.
2. Apply second layer of asphalt felt moisture barrier vertically over first layer at inside and outside corners
3. Any penetrations, punctures, tears or damages in asphalt felt moisture barrier shall be repaired or replaced per Architect's instruction prior to lath application.

B. All window, door, vent, utility pipe, etc. penetration through cement plaster walls and surfaces shall comply with the Western Conference of Lathing and Plastering Institutes, Inc. "Penetration Flashing Recommendation"

3.02 APPLICATION OF LATH AND ACCESSORIES

A. Cement Plaster shall be used at, and only at, all vertical locations unless otherwise noted on drawings. Cement Plaster shall not be used on horizontal surfaces unless otherwise noted on drawings

~~A.~~B. Apply lath directly over Moisture Barrier with fasteners to sheathing and framing members hereinbefore specified, spaced not more than 6" apart vertically and 16" apart horizontally, directly over framing members. Nails shall engage the lath securely with washers as required. Laps of plaster lath shall be 1" minimum and shall be laced with #18 gauge galvanized soft steel wire. If plain or standard stucco netting is used, apply in same manner, except that fasteners shall include furring washers. Attach lath per CBC 2507.3.

~~B.~~C. Install all required plaster grounds, base, drip, and weep screeds, corner reinforcement, special stops, control joints, strip lath, soffit vents, and other metal accessories. Apply and shim out to required thickness. Set plumb, level and straight, free of kinks and bends. Install casing beads or stops at the edges of all plaster continuously. Provide expansion joints or control joints where indicated or required by referenced standards. Location of all control joints shall be approved by the Architect prior to installation do not install in conspicuous location unless approved by the Architect. Intersections and splices of control joins shall be set in continuous bead of sealant. Control joints, expansion joints, wall reveals and soffit vents shall be cleaned and clear of plaster within the control, expansion, reveal and vent areas after plaster application and before final plaster set. Do not use sharp instruments or tools that might remove galvanized coating from plaster accessories. Casing beads shall not be installed redundantly where wood trims are shown as stucco grounds in details (i.e. windows, doors, etc.).

~~E.~~D. D. For application on Concrete walls, lath, bonding agent, or other acceptable methods per ASTM C926 may be used.

3.03 PREPARATION FOR PLASTER ON CMU WALLS OR CONCRETE

A. Thoroughly clean CMU or Concrete walls by water washing.

B. Apply bonding agent as recommended by Plaster material manufacturer in compliance with CBC 2510.7.1.

C. Apply leveling strips on curved walls.

1. Leveling strips shall consist of feathered plaster coat near center of masonry unit to provide radius surface for application of scratch coat.

3.04 APPLICATION OF CEMENT PLASTER (STUCCO)

A. Requirements:

1. Verify that surfaces to be plastered are free of dust, loose particles, oil, rust and other foreign matter that would adversely affect bond of plaster coats.
2. Wherever J-mold is used as edge condition for selected finish Contractor shall adhere to the following intention: Adjacent components such as doors, windows, cabinets, etc. shall be installed prior to ensure control of reveal. J-mold trim is part of the finish and, by definition shall fit to other components. Other components shall not be made to fit to the J-Mold.

~~2.~~3. Exterior cement plaster (stucco) shall be applied in three-coat work to a minimum thickness of 7/8", and shall be finished in an even carpet float finish ~~to match the existing adjacent conditions~~. Provide sample for Architect's approval prior to commencing work.

~~3.~~4. Scratch and brown coats of cement plaster shall consist of ingredients proportioned as follows: 1-part Portland cement to not less than 3-parts aggregate, and not more than 10% of lime putty. Finish coat shall consist of 1-part Portland cement to not less than 3-parts fine aggregate, and not more than 20% of lime putty.

B. Application:

1. *Scratch Coat*: Scratch coat shall be applied to minimum thickness of 3/8", completely embedding the lath. Scratch coat shall be scratched horizontally to provide mechanical key, and left to cure and dry a minimum of 14 days before applying brown coat. Scratch coat shall be kept moist for a minimum period of 7 days after application.

2. *Brown Coat*: Brown coat shall be applied to minimum thickness of ¼" to 3/8" in two applications and shall be brought to a true, even plane by rodding and floating, and shall be left rough and ready to receive the finish coat. Scratch coat shall be dampened to provide suction before applying brown coat. Brown coat shall be left to dry a minimum of 10 days, and shall be kept moist for a minimum period of 4 days after application.
3. *Finish Coat*: Finish coat shall be laid out to permit the completion of an entire surface in one operation. Finish coat shall be applied to minimum thickness of 1/8", or in such thickness as may be necessary to ensure the full thickness specified, or other thickness indicated, as required for this Work. Follow manufacturer's application instructions.

3.05 WORK QUALITY

A. Exterior Cement Plaster shall be of the highest quality and finish. Intersections of planes shall be sharp and accurate. Plane surfaces shall finish plumb, straight, and true to an 8-foot straight edge. Workers shall employ 8-foot screeds (where possible) during application of brown and finish coats.

B. Where plaster stops, screeds, control or expansion joints, angles, wall panels, or other features are employed for architectural treatment, panels framed by these accessories or other construction shall be finished in one operation. No stopping vertically or horizontally in the middle or intermediate area of a panel will be permitted.

C. Imperfections that occur after curing and drying shall be repaired or replaced to the extent the corrections require up to the next appropriate break point in all directions to the satisfaction of the Architect at no additional cost to the Owner.

D. Doubling back of the brown coat of plaster within 48 hours of application of scratch coat will be permitted, providing the recommendations of the Plastering Industry Bureau (PIB) are accurately followed. Arrange for PIB to provide job service, at no additional cost to the Owner, to assure a finished stucco application without shrinkage cracks.

E. At curved CMU walls, plaster shall form a continuous radius equal to that of the exterior face of the wall plus the plaster thickness.

1. Masonry joints shall NOT telescope through the plaster finish.
2. Contractor shall provide as many coats as necessary to hide all masonry joints.

3.06 CURING OF PLASTER

A. Cement plaster (stucco) shall be cured for a minimum period of 4 days after completion. Moistening shall begin as soon as the plaster has hardened sufficiently. Water shall be applied with a soft, fine brush or other approved method. Soaking of walls shall be avoided.

B. Apply only as much water as will be readily absorbed. Plaster shall be protected from uneven and excessive evaporation during hot, dry weather. Contractor shall provide for curing on Saturdays and Sundays and holidays, if necessary.

C. Protect stucco against damage from cold or too rapid drying or from any other cause.

~~1.08~~3.07 PROTECTION

A. Surfaces adjacent to plastering work shall be protected from spattering or other staining caused by plastering. Any surfaces spattered or stained shall be cleaned to the satisfaction of the Architect within 24 hours of application. Contractor shall be responsible for repairing work with stains.

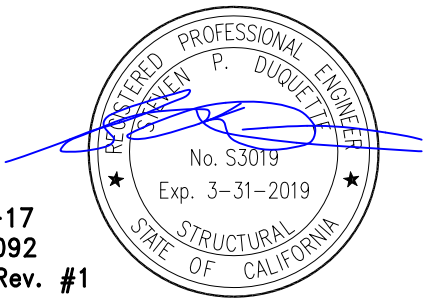
B. Protect plasterwork from subsequent construction and finishing activities, and maintain protection until acceptance of the Project by the Owner.

END OF SECTION

DUQUETTE
ENGINEERING
4340 Stevens Creek Blvd. #200, San Jose, California 95129
Phone: (408) 615-9200 Fax. (408) 615-9900

Project: Independence High School
Building J
1776 Educational Park Dr.
San Jose, CA 95133

Sheet: of
Date: 4-20-17
Job#: 15-0092
Sht#: S0.0 Rev. #1



STRUCTURAL SPECIFICATIONS SUMMARY

- SEE BOOK SPECIFICATION FOR ADDITIONAL INFORMATION NOT SHOWN.

SHEATHING

ALL SHEATHING SHALL CONFORM TO U.S. PRODUCT STANDARD PS 1, AMERICAN PLYWOOD ASSOCIATION. EACH SHEET SHALL BE STAMPED WITH THE PS AND/OR APA GRADEMARK. 1

FLOOR SHEATHING

- SHALL BE MINIMUM 3/4" OSB OR 4 PLY INTERIOR TYPE RATED SHEATHING, C-D GRADE WITH EXTERIOR GLUE (CDX-EXPOSURE 1), SPAN RATING 48/24, SPECIES GROUP 2 OR BETTER.

LIGHT GAGE METAL CONNECTORS

ALL LIGHT GAGE METAL CONNECTORS SHALL BE SIMPSON COMPANY STRONG TIE CONNECTORS, UNLESS NOTED OTHERWISE ON THE DRAWINGS.

PARALLAMS / MICROLLAMS / TJI'S

PARALLAMS, MICROLLAMS AND TJI'S SHALL BE MANUFACTURED BY WEYERHAEUSER.
PARALLAM AND MICROLLAM CONSTRUCTION SHALL BE IN ACCORDANCE WITH ICBO REPORT ESR-1387.

CONCRETE

ALL CONCRETE SHALL HAVE PROPERTIES AS LISTED BELOW:

1 MAXIMUM FLY ASH CONTENT: 15 PERCENT (AS PERCENTAGE REPLACEMENT OF CEMENT).

2. DO NOT USE AIR ENTRAINMENT ADDITIVES.

3. USE OF WATER-REDUCING ADMIXTURE IS REQUIRED.

4. MAXIMUM SLAG CEMENT: 25 PERCENT (AS PERCENTAGE OF CEMENT).

5. APPROXIMATELY 3 OUNCES PER SACK OF CEMENT OF POZZOLITH 300R OR APPROVED EQUAL SHALL BE USED AS A WATER DISPERSING ADDITIVE.

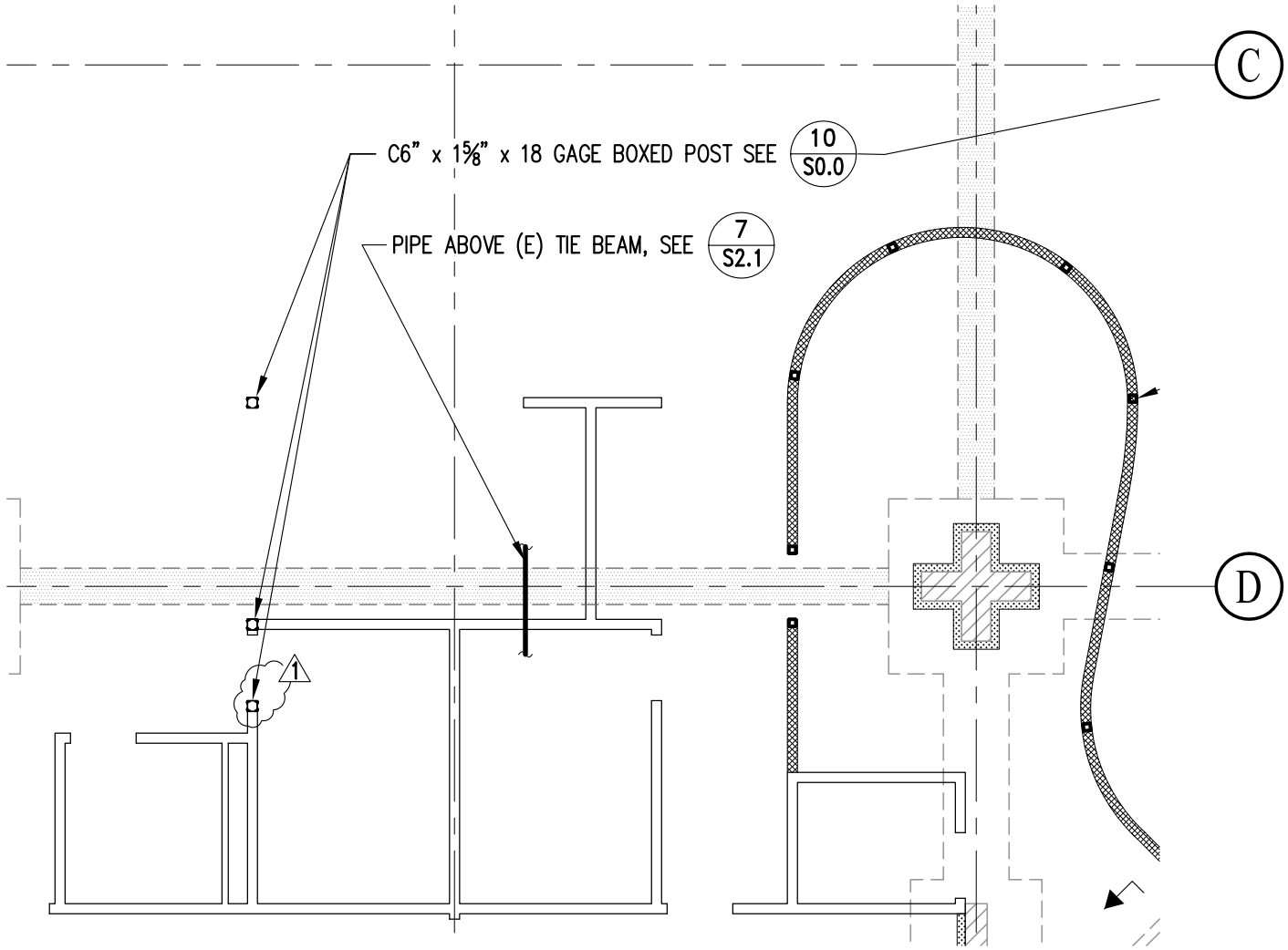
CONCRETE ELEMENT	MIN. 28 DAY COMPRESSIVE STRENGTH	MAX. SIZE AGGREGATE (INCHES)	MAX. SUMP	MAX. WATER/ CEMENT RATIO	DENSITY (PCF)
SLAB ON GRADE	3000	3/4	4	0.45	145
YARD CONCRETE, WALKS, AND CURBS	2500	3/4	4	0.60	145

DUQUETTE
ENGINEERING
4340 Stevens Creek Blvd. #200, San Jose, California 95129
Phone: (408) 615-9200 Fax. (408) 615-9900

Project: Independence High School
Building J
1776 Education Park Dr.
San Jose, CA 95133

Sheet: of
Date: 4-20-17
Job#: 15-0092
Sht#: S1.0 Rev-1

REGISTERED PROFESSIONAL ENGINEER
STEVEN P. DUQUETTE
No. S3019
Exp. 3-31-2017
STRUCTURAL
STATE OF CALIFORNIA



FOUNDATION PLAN

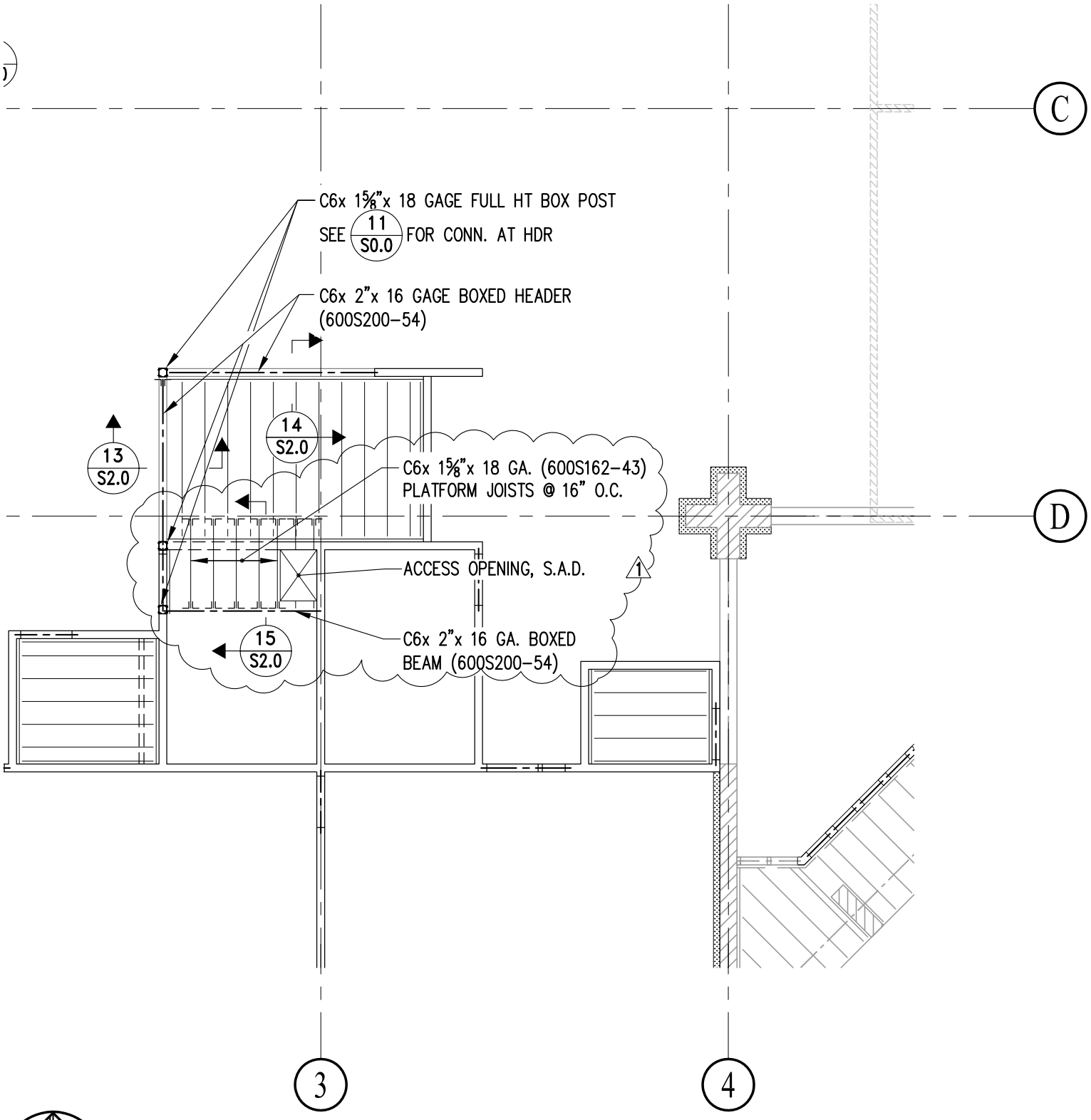
SCALE: 1/8" = 1'-0"

DUQUETTE
ENGINEERING
4340 Stevens Creek Blvd. #200, San Jose, California 95129
Phone: (408) 615-9200 Fax. (408) 615-9900

Project: Independence High School
Building J
1776 Educational Park Dr.
San Jose, CA 95133

Sheet: of
Date: 4-20-17
Job#: 15-0092
Sht#: S1.1 Rev. #1

REGISTERED PROFESSIONAL ENGINEER
STEVEN P. DUQUETTE
No. S3019
Exp. 3-31-2019
STRUCTURAL
STATE OF CALIFORNIA



CEILING FRAMING PLAN

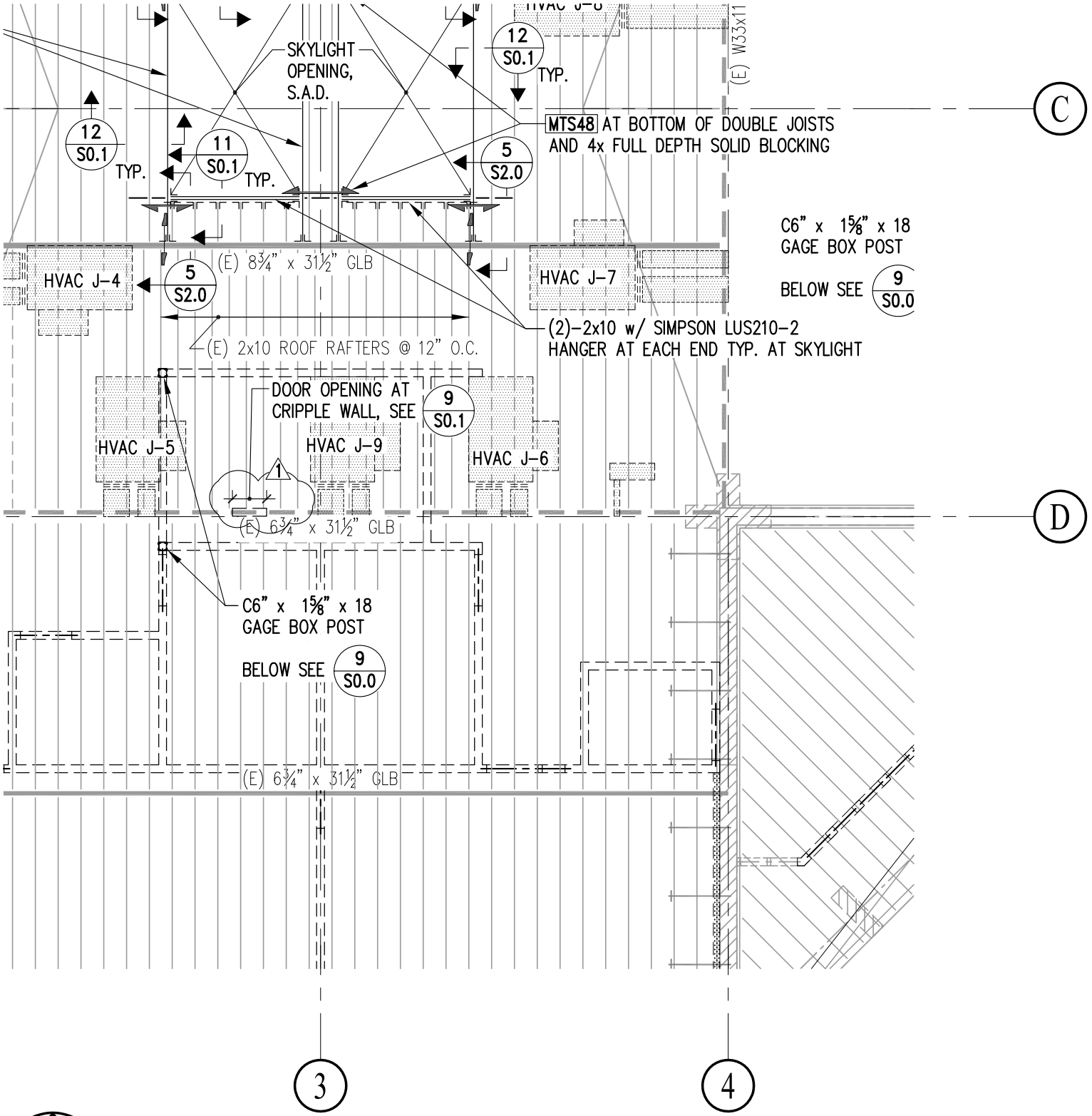
SCALE: 1/8" = 1'-0"

DUQUETTE
ENGINEERING
4340 Stevens Creek Blvd. #200, San Jose, California 95129
Phone: (408) 615-9200 Fax. (408) 615-9900

Project: Independence High School
Building J
1776 Educational Park Dr.
San Jose, CA 95133

Sheet: of
Date: 4-20-17
Job#: 15-0092
Sht#: S1.2 Rev.#1

REGISTERED PROFESSIONAL ENGINEER
STEVEN P. DUQUETTE
No. S3019
Exp. 3-31-2019
STRUCTURAL
STATE OF CALIFORNIA



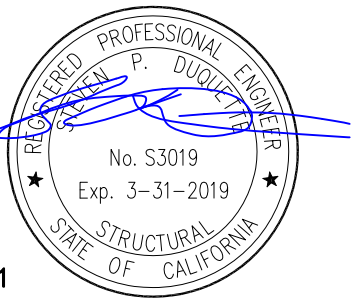
ROOF FRAMING PLAN

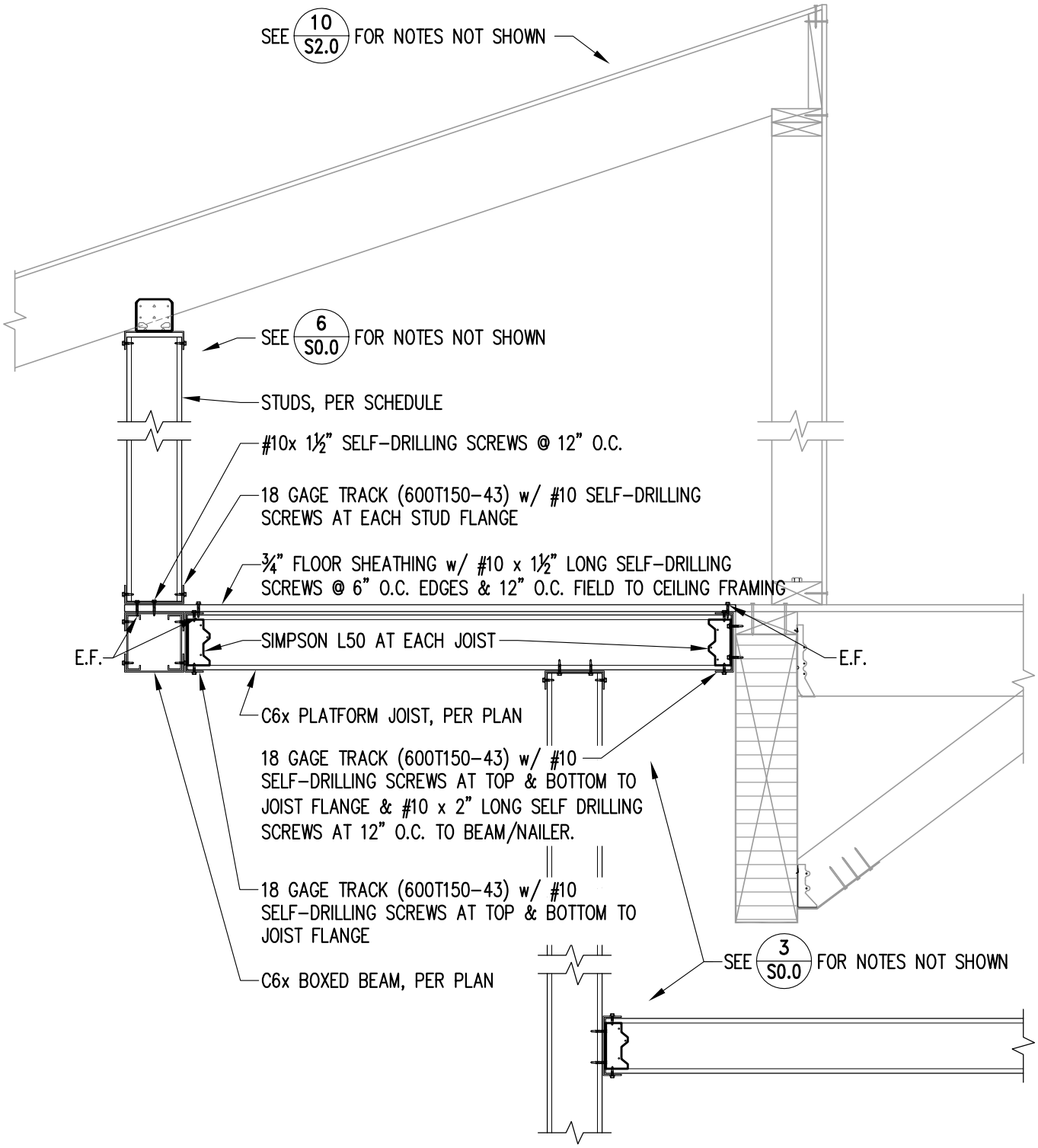
SCALE: 1/8" = 1'-0"

DUQUETTE
ENGINEERING
4340 Stevens Creek Blvd. #200, San Jose, California 95129
Phone: (408) 615-9200 Fax. (408) 615-9900

Project: Independence High School
Building J
1776 Educational Park Dr.
San Jose, CA 95133

Sheet: of
Date: 4-20-17
Job#: 15-0092
Sht#: S2.0 Rev. #1





SECTION 15

SCALE: 3/4" = 1'-0"

LED TROFFER

LT

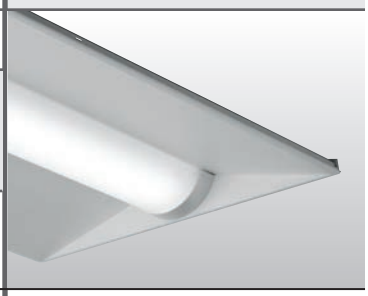
LED

CATALOG #:

TYPE:

PROJECT:

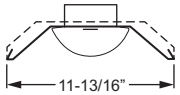
NOTES:



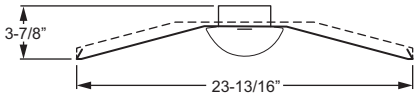
EXAMPLE: **LT - 2 4 - L43/830 - AF - OPTIONS - DIM - UNV**

LT	2	4	L43/830	AF	OPTIONS	DIM	UNV
SERIES	NOM. W.	NOM. L.	LUMEN PACKAGE	CRI & CCT	SHIELDING	OPTIONS	DRIVER	VOLTAGE

CROSS SECTIONS



1x4



2x2 or 2x4

ORDERING INFORMATION

SERIES

LT	LED Troffer

NOMINAL WIDTH

1	1' (4' length only)
2	2'

NOMINAL LENGTH

2	2' (2' width only)
4	4'

LED PACKAGE

EXAMPLE: L43/830			
LUMEN PACKAGE	NOMINAL LUMENS	MINIMUM CRI & CCT	WATTAGE
1x4			
L30	3,000		29
L47	4,700		49
2x2			
L22	2,200	**830** = 82 CRI, 3000K	21
L34	3,400	**835** = 82 CRI, 3500K	36
L43	4,300	**840** = 82 CRI, 4000K	41
2x4			
L30	3,000		29
L43	4,300		40
L73	7,300		71

Nominal lumen output based on 3500 CCT. Actual lumens may vary +/-5%, see fixture performance data. Additional LED lumen packages available, see options.

SHIELDING

AF	Frosted acrylic

OPTIONS

For flexible whip options, see Technical Info.

EM/10W	10-watt emergency battery (120-277V only)
EQCLIPS	Earthquake clips (4 per fixture; LT is compatible with Williams earthquake clips only)
OCC__	Integral occupancy and daylight sensor: **OCCPH LRI1655 120/277**
(L__)	Additional lower lumen packages available. Specify in increments of 100 nominal lumens. Option must be specified with next *higher* lumen package. **Example:** 5,000 nominal lumens = LT-24-L73/840-**(L50)**.
CP	Chicago Plenum (CCEA)

ACCESSORIES

See Technical Info for Drywall Kit and Cord Location details.
See page 3 for Surface Mount details.

LT-14-SMK-W	Surface mount kit for LT, 1'x4', white
LT-22-SMK-W	Surface mount kit for LT, 2'x2', white
LT-24-SMK-W	Surface mount kit for LT, 2'x4', white
DFK-1248W	Drywall kit, 12" x 48", white
DFK-2424W	Drywall kit, 24" x 24", white
DFK-2448W	Drywall kit, 24" x 48", white

DRIVER

Additional dimming drivers available, see Technical Info.

DRV	Driver prewired for non-dimming applications
DIM	10% dimming driver prewired for 0-10V low voltage applications

VOLTAGE

120	120V
277	277V
UNV	120-277V
347	347V (not available with EM drivers)

FEATURES

- Average efficacy of 100+ lm/W
- Matte white paint and frosted lens provide pleasing architectural aesthetics with non-glare reflective surfaces
- Shallow housing depth
- Integral occupancy and daylight sensor available
- Rated >50,000 hours at 70% lumen maintenance (L70).
- Minimum 82 CRI; 3000K, 3500K, or 4000K CCT
- This fixture is proudly made in the USA

SPECIFICATIONS

Housing/Reflector – Precision die-formed 22-gauge C.R.S.
Shielding – Frosted acrylic.
Finish – Highly reflective non-glare matte white polyester powder coat bonded to phosphate-free, multi-stage pretreated metal. All parts painted after fabrication to facilitate installation, increase efficiency, and inhibit corrosion.
Electrical – High quality mid-power LED boards. L70 >50,000 hours.
Mounting – NEMA Type "G". Surface mount and drywall kit accessories available, ordered separately.
Labels –

- cCSAus certified as luminaire suitable for dry or damp locations.
- DLC qualified products listed at www.designlights.org.
- City of Chicago Environmental Air approved when specified with CP option.

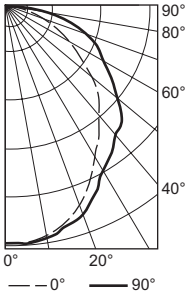
Warranty – 5-year limited warranty, see hew.com/warranty.

IMPORTANT:

Electrostatic sensitive unit. Observe precautions when handling.

PHOTOMETRY

LT-24-L43/830-AF-DIM-UNV Report #: 18667.0; 02/04/15 | Total Luminaire Output: 4205 lumens; 40 Watts
Efficacy: 106 lm/W | 82 CRI; 3043K CCT | IES Spacing Criteria: End: 1.1, Across: 1.2, Diagonal: 1.2



CANDLEPOWER DISTRIBUTION

Vertical Angle	Horizontal Angle 0°	45°	90°	Zonal Lumens
0	1510.	1510.	1510.	
5	1514.	1514.	1516.	144.5
15	1428.	1443.	1457.	409.1
25	1258.	1301.	1336.	601.2
35	1029.	1102.	1162.	690.5
45	838.	954.	1044.	733.6
55	589.	723.	827.	642.7
65	377.	535.	644.	519.1
75	191.	347.	425.	347.0
85	54.	128.	113.	117.0
90	0.	0.	0.	

LUMEN SUMMARY

Zone	Lumens	% Fixture
0 - 30	1155.	27.5
0 - 40	1845.	43.9
0 - 60	3222.	76.6
0 - 90	4205.	100.0
0 - 180	4205.	100.0

FIXTURE PERFORMANCE DATA

LED PACKAGE	NOMINAL LUMENS	WATTAGE	EFFICACY (lm/W)
1x4			
L30/830	2798	29	96.5
L30/835	2910	29	100.3
L30/840	3026	29	104.3
L47/830	4851	49	99.0
L47/835	4745	49	96.8
L47/840	5136	49	104.8
2x2			
L22/830	1955	21	93.1
L22/835	2033	21	96.8
L22/840	2115	21	100.7
L34/830	3252	36	90.3
L34/835	3424	36	95.1
L34/840	3559	36	98.9
L43/830	4155	41	101.4
L43/835	4351	41	107.8
L43/840	4385	41	108.6
2x4			
L30/830	2835	29	97.8
L30/835	2948	29	101.7
L30/840	3066	29	105.7
L43/830	4205	40	106.0
L43/835	4378	40	109.5
L43/840	4548	40	114.0
L73/830	6929	71	97.6
L73/835	7258	71	102.2
L73/840	7462	71	105.1

- Photometrics tested in accordance with IESNA LM-79. Results shown are based on 25°C ambient temperature.
- Wattage shown is average for 120V through 277V input.
- Results scaled based on relative CCT output.

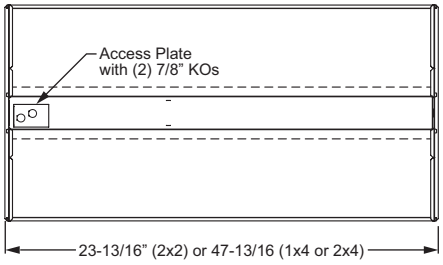
DLC qualified products listed at www.designlights.org.

The U.S. Department of Energy's Lighting Facts® Program has verified product performance based on industry-standardized testing. For details, see H.E. Williams LT series at www.lightingfacts.com.

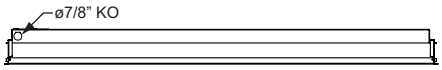
Information contained herein is subject to change without notice.

FIXTURE DETAILS

BACK VIEW



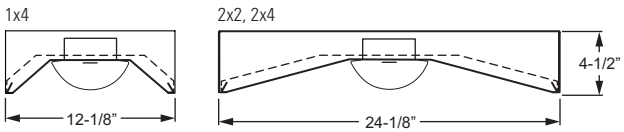
SIDE VIEW



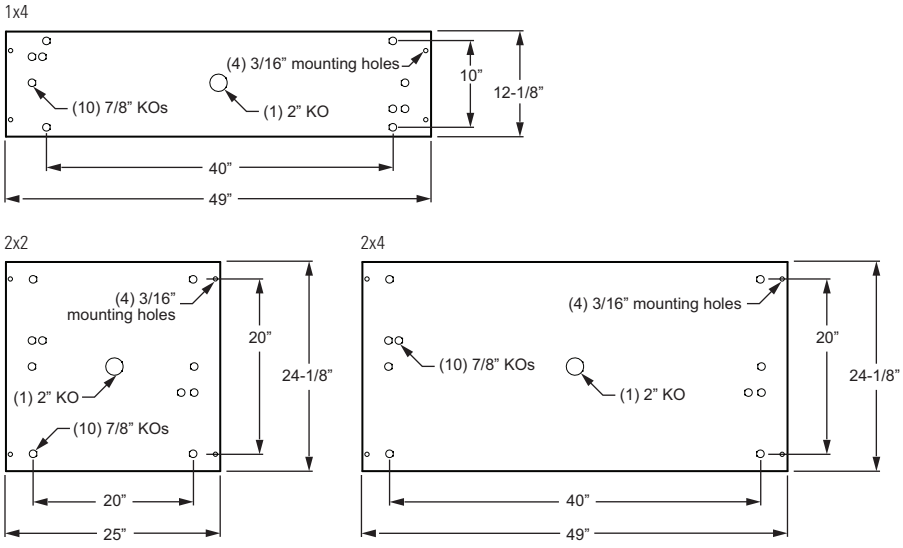
SURFACE MOUNT KIT (Shipped Separately)

2x4 shown

CROSS SECTIONS



BACKVIEWS



SECTION 23 09 00 HVAC INSTRUMENTATION AND CONTROLS

PART 1 - GENERAL

1.01 GENERAL

A. Alerton EMS is the district wide control system for East Side Union High School District.

B. Coordination Meeting: The Control contractor shall meet with the Mechanical contractor to coordinate details of the interface between the mechanical equipment and the DDC network. The Owner or his designated representative shall be present at this meeting. Each Installer shall provide the Owner and all other Installers with details of the proposed interface including PICS for BACnet equipment, hardware and software identifiers for the interface points, network identifiers, wiring requirements, communication speeds, and required network accessories. The purpose of this meeting shall be to insure there are no unresolved issues regarding the integration of these products into the DDC network. Submittals for these products shall not be approved prior to the completion of this meeting

C. Provide all necessary BACnet-compliant hardware and software to meet the system's functional specifications.

D. Prepare individual hardware layouts, interconnection drawings, and software configuration from project design data.

E. Implement the detailed design for all analog and binary objects, system databases, graphic displays, logs, and management reports based on control descriptions, logic drawings, configuration data, and bid documents.

F. Design, provide, and install all equipment cabinets, panels, data communication network cables needed, and all associated hardware.

G. Provide and install all interconnecting cables between supplied cabinets, application controllers, and input/output devices.

H. Provide complete manufacturer's specifications for all items that are supplied. Include vendor name of every item supplied.

I. Provide as-built documentation, operator's terminal software, diagrams, and all other associated project operational documentation (such as technical manuals) on approved media, the sum total of which accurately represents the final system.

1.02 SYSTEM DESCRIPTION

A. General: The control system shall consist of a high-speed, peer-to-peer network of DDC controllers and a web-based operator interface. Depict each mechanical system and building floor plan by a point-and-click graphic. A web server with a network interface card shall gather data from this system and generate web pages accessible through a conventional web browser on each PC connected to the network. Operators shall be able to perform all normal operator functions through the web browser interface.

B. The system shall directly control HVAC equipment as specified in Section 23 09 00 Section 4 (Sequences of Operation).

C. Room temperature sensors shall be provided to monitor the temperature in the MDF room. Include all necessary wiring and firmware such that room sensor includes field service mode.

D. System shall use the BACnet protocol for communication to the operator workstation or web server and for communication between control modules. Schedules, setpoints, trends, and alarms specified in Section 23 09 00 Section 4 (Sequences of Operation) shall be BACnet objects

1.03 APPROVED MANUFACTURERS

A. Alerton to match existing. Contact Katrina Hearn at Syserco: 510.498.1418 or e-mail: k.hearn@syserco.com for further bid clarification.

1.04 QUALITY ASSURANCE

A. Responsibility: The supplier of the EMCS shall be responsible for inspection and Quality Assurance (QA) for all materials and workmanship furnished.

B. Component Testing: Maximum reliability shall be achieved through extensive use of high-quality, pre-tested components. Each and every controller, sensor, and all other DDC components shall be individually tested by the manufacturer prior to shipment.

C. Tools, Testing and Calibration Equipment: The EMCS supplier shall provide all tools, testing, and calibration equipment necessary to ensure reliability and accuracy of the system.

D. The systems control contractor shall have been in business as a controls contractor a minimum of five years, be able to verify successful installation and completion of at least five other projects similar in size and nature to this current project, and be the authorized installing contractor for the manufacturer of the BACnet components.

E. Control system shall be engineered, programmed and supported completely by representative's local office that must be within 75 miles of project site.

1.05 REFERENCE STANDARDS

A. The latest edition of the following standards and codes in effect and amended as of supplier's proposal date, and any applicable subsections thereof, shall govern design and selection of equipment and material supplied:
   1. American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE).
   2. ANSI/ASHRAE Standard 135-2001, BACnet.
   3. Uniform Building Code (UBC), including local amendments.
   4. UL 916 Underwriters Laboratories Standard for Energy Management Equipment. Canada and the US.
   5. National Electrical Code (NEC).
   6. FCC Part 15, Subpart J, Class A.

B. City, county, state, and federal regulations and codes in effect as of contract date.

1.06 SYSTEM PERFORMANCE

A. Performance Standards. System shall conform to the following minimum standards over network connections. Systems shall be tested using manufacturer's recommended hardware and software for operator workstation (server and browser for web-based systems).
   1. Graphic Display. A graphic with 20 dynamic points shall display with current data within 10 sec.
   2. Graphic Refresh. A graphic with 20 dynamic points shall update with current data within 8 sec. and shall automatically refresh every 15 sec.
   3. Configuration and Tuning Screens. Screens used for configuring, calibrating, or tuning points, PID loops, and similar control logic shall automatically refresh within 6 sec.
   4. Object Command. Devices shall react to command of a binary object within 2 sec. Devices shall begin reacting to command of an analog object within 2 sec.
   5. Alarm Response Time. An object that goes into alarm shall be annunciated at the workstation within 15 sec.
   6. Program Execution Frequency. Custom and standard applications shall be capable of running as often as once every 5 sec. Select execution times consistent with the mechanical process under control.
   7. Performance. Programmable controllers shall be able to completely execute DDC PID control loops at a frequency adjustable down to once per sec. Select execution times consistent with the mechanical process under control.
   8. Multiple Alarm Annunciations. Each workstation on the network shall receive alarms within 5 sec of other workstations.
   9. Reporting Accuracy. System shall report values with minimum end-to-end accuracy listed in Table 1.
   10. Control Stability and Accuracy. Control loops shall maintain measured variable at setpoint within tolerances listed in Table 2

Table 1
Reporting Accuracy

Measured Variable	**Reported Accuracy**
Space Temperature	±0.5ºC (±1ºF)

Note 1: Accuracy applies to 10% - 100% of scale
Note 2: For both absolute and differential pressure
Note 3: Not including utility-supplied meters

Table 2
Control Stability and Accuracy

Controlled Variable	**Control Accuracy**	**Range of Medium**
Space Temperature	±2.0ºF	

1.07 SUBMITTALS

A. Drawings
   1. The system supplier shall submit engineered drawings, control sequence, and bill of materials for approval.
   2. Drawings shall be submitted in the following standard sizes: 11” x 17” (ANSI B).
   3. Eight complete sets (copies) of submittal drawings shall be provided.
   4. Drawings shall be available on CD-ROM.

B. System Documentation Include the following in submittal package:
   1. System configuration diagrams in simplified block format.
   2. Electrical drawings that show all system internal and external connection points, terminal block layouts, and terminal identification.
   3. Complete bill of materials and valve schedule.
   4. Manufacturer's instructions and drawings for installation, maintenance, and operation of all purchased items.

1.08 WARRANTY

A. Warranty shall cover all costs for parts, labor, associated travel, and expenses for a period of one year from completion of system acceptance.

B. Hardware and software personnel supporting this warranty agreement shall provide on-site or off-site service in a timely manner after failure notification to the vendor. The maximum acceptable response time to provide this service at the site shall be 24 hours Monday through Friday, 48 hours on Saturday and Sunday.

C. This warranty shall apply equally to both hardware and software.

1.09 RELATED WORK IN OTHER SECTIONS

A. Refer to Division 0 and Division 1 for related contractual requirements.

B. Refer to Section 23 05 00 for General Mechanical Provisions.

C. Refer to Section 26 00 00 for General Electrical Provisions.

1.10 COORDINATION

A. Provide all necessary action and coordination with regards to ACCEPTANCE TESTING as outlined in Specification Section 23 05 00.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Use new products the manufacturer is currently manufacturing and selling for use in new installations. Do not use this installation as a product test site unless explicitly approved in writing by Owner. Spare parts shall be available for at least five years after completion of this contract

2.02 COMMUNICATION

A. Control products, communication media, connectors, repeaters, hubs, and routers shall comprise a BACnet internetwork. Controller and operator interface communication shall conform to ANSI/ASHRAE Standard 135, BACnet.

B. Install new wiring and network devices as required to provide a complete and workable control network.

2.03 OPERATOR INTERFACE

A. SYSTEM SOFTWARE.
1. Operating System: Existing operation system shall be reused.
2. System Graphics: Program new graphic for new equipment.

2.04 CONTROLLER SOFTWARE

A. Existing building and energy management application software resides and operates in existing system controllers. Applications shall be editable through operator workstation, web browser interface, or engineering workstation.

B. Scheduling: Program school district schedule

C. Control Panels.
1. Indoor control panels shall be fully enclosed NEMA 1 construction with hinged door key-lock latch and removable sub-panels. A common key shall open each control panel and sub-panel.
2. Prewire internal and face-mounted device connections with color-coded stranded conductors tie-wrapped or neatly installed in plastic troughs. Field connection terminals shall be UL listed for 600 V service, individually identified per control and interlock drawings, with adequate clearance for field wiring.
3. Each local panel shall have a control power source power switch (on-off) with overcurrent protection.

2.05 Wiring And Raceways

A. General. Provide copper wiring, plenum cable, and raceways as specified in applicable sections of Division 26.

B. Insulated wire shall use copper conductors and shall be UL listed for 90°C (200°F) minimum service.

PART 3 - EXECUTION

3.01 INSTALLATION (GENERAL)

A. Install in accordance with manufacturer's instructions.

B. Provide all miscellaneous devices, hardware, software, interconnections installation, graphics and programming required to ensure a complete operating system in accordance with the sequences of operation and point schedules.

3.02 LOCATION AND INSTALLATION OF COMPONENTS

A. Locate and install components and control panel for easy accessibility; in general, mount 48 inches above floor with minimum 3'-0" clear access space in front of units.

B. All instruments, switches, transmitters, etc., shall be suitably wired and mounted to protect them from vibration, moisture and high or low temperatures.

3.03 TRAINING

A. Provide application engineer to instruct owner in operation of systems and equipment.

B. Provide system operator's training to include such items as the following: modification of data displays, alarm and status descriptors, requesting data, execution of commands and request of logs. Provide this training to a minimum of 2 persons.

C. Provide ongoing training sessions as follows:
1. Provide 8 hours of onsite training upon project completion.
2. Provide 4 hours of onsite training one month after project completion.
3. Provide 4 hours of onsite training 6 months after project completion.

3.04 ONGOING MAINTENANCE AND EFFICIENCY AGREEMENT

A. Provide optional cost add for a one year annual maintenance and energy efficiency agreement which consists of the following tasks:
1. Software security and maintenance updates.
2. On-site support for owner directed tasks.
3. Preventative maintenance and energy efficiency reports and recommendations.
4. Annual preventative maintenance and energy efficiency routines

PART 4 - SEQUENCE OF OPERATIONS

4.01 GENERAL

A. Provide a complete and operational temperature control and building automation system based on the following points and sequence of operation in the specification drawings. The system shall be complete as to sequences and standard control practices

B. BACnet Object List
1. The following points as defined for each piece of equipment are designated as follows:
a. Analog In (AI) – Defined as any variable input (temperature), (position), (pressure), etc.

C. See Detail 1, 5 on sheet M0.3.

END OF SECTION

SECTION 23 74 13 PACKAGED AIR CONDITIONING UNIT

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Section, apply to this Section.

1.02 DESCRIPTION OF WORK

A. Consult all other Sections, determine the extent and character of related work and properly coordinate work specified herein with that specified elsewhere to produce a complete, finished and workman-like installation. Work under this section includes all labor, equipment, material, services, transportation, etc. required for any reasonably incidental to the complete and satisfactory installation of all of the HVAC Systems as indicated on the Drawings or specified herein.

1. Package Gas/Electric Air Conditioning units.
2. Gravity Ventilators.
3. Vibration Isolation.
4. Test and Balance.
5. Submittals and Shop Drawings.
6. Record Drawings.
7. Operation and Maintenance Manuals.
8. Vibration isolation, supports and hangers.
9. Seismic restraining devices.
10. Caulking
11. Guarantee

1.03 RELATED WORK SPECIFED ELSEWHERE

A. Section 23 05 00, GENERAL MECHANICAL PROVISIONS

B. Section 23 07 00, INSULATION

C. Section 23 31 00, DUCTWORK AND ACCESSORIES

D. Section 23 05 93, TESTING, ADJUSTING, AND BALANCING

1.04 REFERENCES

A. AABC - National Standards for Field Measurement and Instrumentation, Total System Balance.

B. AMCA 210 - Laboratory Methods of Testing Fans for Rating Purposes.

C. AMCA 300 - Test code for sound rating air-moving devices.

D. ANSI/NFPA 90A - Installation of Air Conditioning and Ventilation System.

E. ARI 270 - Sound rating of Outdoor Unitary Equipment.

F. ASHRAE 52-76 - Method of Testing Air Cleaning Devices Used in General Ventilation for Removing Particulate Matter.

G. SMACNA - Low Pressure Duct Construction Standards.

H. California Mechanical Code - 2010 Edition.

1.05 SUBMITTALS AND SHOP DRAWINGS

A. Contractor agrees that shop drawings submittals processed by the District do not become Contract Documents and are not Change Orders; that the purpose of the shop drawing review is to establish a reporting procedure and is intended for the Contractor's convenience in organizing his work and to permit the District to monitor the Contractor's progress and understanding of the design. The process of review of the Contractor's submittals is not of testing the District's perception. If deviations, discrepancies or conflicts between shop drawings submittals and the Contract Documents are discovered either prior to or after the shop drawing submittals is processed by the District, the Contractor agrees that the Contract Documents shall control and shall be followed.

B. Materials and Equipment: As soon as possible and within 35 days after award of the contract, and before their purchase, the Contractor shall submit to the District seven bound booklets for approval containing a complete list of materials, specialties and equipment he is to furnish for the installation. Literature shall be standard manufacturer's catalog cuts and items to be installed shall be clearly indicated. All submittals shall be made at one time.

C. Each item shall be identified by manufacturer, brand and trade name, number, size, rating and whatever other data is necessary to properly identify and check the materials and equipment. The words: "as specified" will not be considered sufficient identification.

D. Accessories, controls, finish, etc., not submitted or identified with the submitted equipment shall be furnished and installed as specified.

E. Shop drawings shall be approved only to extent of information indicated. Approval of an item of equipment shall not be construed to mean approval for components for that item for which Contractor has provided no information.

F. Approval of shop drawings shall not relieve Contractor of responsibility for providing all controls, wiring, components, etc. which are shown or specified, or all additional controls, wiring, components, etc. required to provide complete and correctly operating mechanical systems.

G. Submit product data for the following manufactured products, assemblies, personnel and testing agencies required for this project.

1. Packaged Gas/ Electric Air Conditioning units.

2. Gravity Ventilators.

3. Controls.

4. Detailed procedures, agenda, sample report forms, and copy of AABC National Project Performance Guarantee.

1.06 AVAILABILITY OF SPECIFIED EQUIPMENT

A. Verify prior to bidding that all specified equipment is available and can be obtained in time for installation during orderly and timely progress of the work.

B. In the event that specified items will not be so available, notify the District prior to receipt of bids

C. Costs of delays because of non-availability of specified items, when such delays could have been avoided by proper investigation on the part of the Contractor, will be back-charged as necessary and shall not be born by the District.

1.07 RECORD DRAWINGS

A. The contractor shall arrange and pay for one set of white prints of the HVAC drawings, which he shall alter in red to show all changes made to the original layout. These drawings shall be kept current.

B. The contractor shall deliver these completed to the District when the job is finished and accepted prior to final payment.

1.08 OPERATION AND MAINTENANCE DATA

A. Submit two sets prior to final inspection, bound in 8-1/2 x 11 inch text pages, binders with durable plastic covers. Prepare binder covers with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS", and title of project. Internally subdivide the binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.

B. Contents: Prepare a Table of Contents with each Product or system description identified.

1. Part 1: Directory listing names, addresses, and telephone numbers of District, Contractor, Sub-contractors, and major equipment suppliers.

2. Part 2: Operation and maintenance instructions, arranged by system. Identify the following:
   a. Significant design criteria.
   b. List of equipment.
   c. Parts list for each component.
   d. Operating instructions.
   e. Maintenance instructions for equipment and systems.
   f. Maintenance instructions for special finishes, including recommended cleaning methods and materials and special precautions identifying detrimental agents.

C. Submit one copy of completed volumes in final form 15 days prior to final inspection. This copy will be returned after final inspection, with District comments. Revise content of documents as required prior to final submittal.

D. Submit final volumes (revised) within ten days after final inspection.

1.09 GUARANTEES

A. The Contractor, in accepting this contract, binds himself to replace or repair at his own expense any defect in workmanship or material which may appear within a period of two (2) years from the date of the final acceptance of the building, and to pay for all resulting damage which shall appear within the said period; provided always that the Contractor shall not be liable for anything attributable to acts of the agents of the District, or for ordinary wear. Also, given date of work performed by the Contractor be accepted as complete, he shall agree to correct any deficiencies or omissions in respect to the plans or specifications which may appear in the afore-mentioned twenty-four month period.

B. The Contractor guarantees that all piping as provided in this specification will be free from all obstructions, and that all piping will be tight and drip free.

C. All refrigerant compressors shall carry a five-year manufacturer's warranty.

1.10 LOCAL CONDITIONS

A. The Contractor and trade submitting tenders on this work shall visit and will be deemed to have visited the site to ensure that they are familiar with all conditions relating to the work. Failure to visit the site will in no way relieve the successful Contractor of the necessity of furnishing any material or performing any work that may be required to complete the work in accordance with the drawings and specifications without additional cost to the District.

1.11 RULES, REGULATIONS AND CODES

A. All work and materials shall be in full accordance with the latest California Mechanical Code, California Plumbing Code, California Building Code and local rules and regulations, State Fire Marshal regulations, the safety orders of the Division of Industrial Safety; the National Electric Code; the standards of the National Fire Protection Association; American Gas Association; Occupation and Safety Act; American National Standards Institute; American Society of Mechanical Engineers; American Society for Testing and Materials; Installation Standards published by the International Association of Plumbing And Mechanical officials (IAPMO) and other applicable laws, codes, or regulations. Nothing in these specifications shall be construed to permit work not conforming to these codes.

B. Electrical Work: Motors, electrical apparatus and wiring specified in this section shall conform to the National Electrical Manufacturer's Standards and the National Electric Code and bear the Underwriter's label of approval.

C. The Contractor shall furnish, without extra charge, any additional material and labor when and where required to comply with these rules and regulations, though the work be not mentioned in these Specifications or shown on the Drawings. When these Specifications or Drawings call for or describe materials or construction of a better quality or larger sizes than required by the above mentioned rules and regulations, the provisions of these specifications and accompanying drawings shall take precedence.

1.12 FEES AND PERMITS

A. The Contractor must obtain and pay all fees for permits, licenses, inspections, etc., which are required by any legally constituted authority. Coordinate exact requirements with the District prior to bid.

1.13 COORDINATION

A. Following the general arrangement indicated on the Drawings as closely as possible, the Contractor shall coordinate with the architectural, structural, plumbing, electrical and all other trades prior to installation of the materials and equipment to verify adequate space available for installation of the work shown. The District shall be immediately notified if an area of conflict occurs between trades.

B. The Contractor shall bear all costs incurred for work that must be relocated due to conflicts between trades.

C. The Mechanical Contractor shall coordinate all requirements for all points of connection with the General Contractor and other trades prior to bid.

1.14 DRAWINGS

A. The work shall be installed as indicated on Drawings, however, changes to accommodate installation of this work with other work, or in order to meet Architectural or structural conditions, shall be made without additional cost to the District.

B. For the purpose of clarity and legibility, the Drawings are essentially diagrammatic to the extent that many offsets, bends, unions, special fittings and exact locations are not indicated. The Contractor shall make use of all data in all of the Contract Documents, and shall verify this information at the site.

1.15 INSPECTION

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.16 DELIVERY, STORAGE AND PROTECTION OF PROPERTY

A. Place orders for all equipment in time to prevent any delay in construction schedule or completion of project. If any materials or equipment are not ordered in time, additional charges made by equipment manufacturers to complete their equipment in time to meet construction schedule, together with any special handling charges, shall be borne by the contractor.

B. Materials shall be delivered in ample quantities from time to time as may be necessary for the uninterrupted progress of the work. They shall be stored as to cause the least obstruction to the premises and distributed so as to prevent overloading to any portion of the structure.

C. The Contractor shall provide temporary storage and shop areas that are required at the site for the safe and proper storage of materials, tools, and other items used in the performance of this work. These areas shall be constructed only in approved locations and shall not interfere with the work of any other Contractor.

D. All work, equipment and materials shall be protected at all times. The Contractor shall make good all damage caused either directly or indirectly by his own workmen. The Contractor shall also protect his own work from damage. He shall close all pipe and duct openings with caps or plugs during installation. He shall protect all of his equipment and materials against dirt, water, chemical, and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

1.17 DAMAGE BY LEAKS

A. Refer to Section 23 05 00.

1.18 ACCESS TO EQUIPMENT FOR MAINTENANCE

A. Install all equipment, piping, etc. to permit access for normal maintenance. Maintain easy access to filters, motors, etc. Install all such equipment and accessories to facilitate maintenance. Perform any relocation of pipes, etc. required to permit access at request of District at no additional cost to District.

B. Furnish and install access doors or panels in walls, floors, and ceilings to permit access to equipment, dampers, and all other items requiring service. Coordinate location of access doors with other trades as required.

C. Size access panels to allow inspection and removal of all items served.

D. Refer to Section 23 05 00.

PART 2 - PRODUCTS

2.01 GENERAL

A. All materials and equipment shall be new and of the best of their respective grades, free from all defects and of the make, brand or quality herein specified or as accepted by the District.

B. All materials and equipment shall be identified by manufacturer's name or nameplate data. Unidentified material or equipment shall be removed from the site.

C. Equipment specified by manufacturer's number shall include all accessories, controls, etc., listed in the catalog as standard with the equipment. Optional or additional accessories shall be furnished as specified.

D. Where no specific make of material or equipment is mentioned, any first class product of a reputable manufacturer may be used, provided it conforms to the requirements of the system and meets with the approval of the District.

E. Equipment and materials damaged during transportation, installation and operation shall be considered as "totally damaged" and shall be replaced with new. Any variance from this clause shall be made only with written approval of the District.

2.02 PACKAGE ROOFTOP GAS/ELECTRIC AIR CONDITIONING UNITS

A. General:

1. Provide roof-mounted units, electrically controlled heating and cooling unit utilizing scroll hermetic compressors with crankcase heaters for cooling duty and induced draft gas combustion for hating duty.

2. Units shall be of ultra high cooling efficiency and utilize Puron (R-410A) refrigerant.

3. Unit shall be factory assembled, single piece heating and cooling unit. Contained within the unit enclosure shall be all factory wiring, piping, controls, refrigerant charge and special features required prior to field start-up.

B. Quality Assurance

1. Cabinet: Galvanized steel with baked enamel finish, access doors or removable access panels with quick fasteners. Structural members shall be minimum 18 gauge, with access doors or removable panels of minimum 20 gauge.

2. Unit shall well exceed ASHRAE 90.1-2009 Energy Efficiency Standards. All units are ENERGY STAR qualified.

3. Unit shall be rated in accordance with ARI Standards 210 and 360 on all others. All units shall be designed in accordance with the UL Standard 1995. Unit shall be rated in accordance with ARI sound standard 270 and 360.

4. Unit shall be designed to conform to ASHRAE 15.

5. Unit shall be UL and UL Canada, tested and certified in accordance with ANSI A21.47 Standards as a total package.

6. Roof curb shall be designed to conform to NRCA Standards. Galvanized steel, channel frame with gaskets, nailer strips. Provide OSHPD pre-approved 2-inch isolation curb for all units greater than 6 tons cooling capacity or where noted on plans. Curb manufacturer shall be by Canfab or MicroMetal.

7. Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation.

8. Unit casing shall be capable of withstanding 500 hour salt spray exposure per ASTM B117 (scribe specimen).

9. Unit shall be manufactured in a facility registered to ISO 9001:2000.

10. Each unit shall be subjected to a completely automated run testing on the assembly line.

C. Unit cabinet:

1. Constructed of galvanized steel, bonderized and coated with a pre-painted baked enamel finish on all externally exposed surfaces.

2. All airstream interior surfaces shall be bonded with a thermosetting resin (8 to 12% by nominal weight, phenol formaldehyde typical), and coated with an acrylic or other material that meets the NFPA 90 flame retardant requirements and has an 'R' value of 3.70.

3. Cabinet panels shall be hinged with stainless steel hinges or rust resistant brass hinges. Hinged access panels for the filter, compressors, evaporators, evaporator fan, control box and heat sections areas. Each panel shall use multiple quarter-turn latches and handles. Each major external hinged access panel shall be double-wall construction and permanently attached to the rooftop unit. Panels shall also include tiebacks.

4. Return air filters shall be accessible though a hinged access panel and be on a slide-out track using standard size filters.

5. Holes shall be provided in the base rails (minimum 16 gauge) for rigging shackles and level travel and movement during overhead rigging operations.

6. Unit shall have a factory-installed internally sloped condensate drain pan, providing a minimum ¾-in.-14 NPT connection to prevent standing water from accumulating. Pan shall be fabricated of high impact polycarbonate material and shall slide out for cleaning and or maintenance. An alternate vertical drain (3/4-in. NPT) connection is also available. Pan shall be fabricated of epoxy powder coated steel for the other sizes. All drain pans conform to ASHRAE 62 self-draining provisions.

7. Unit shall have standard thru-the-bottom power and control wiring connection capability.

D. Fans:

1. Indoor blower (evaporator fan):
   a. Centrifugal supply air fan blower shall have rubber-isolated, cartridge type ball bearings or pillow-block ball bearings and adjustable belt drive.
   b. Fan wheel shall be made from steel with a corrosion resistant finish. It shall be a dynamically balanced, double-inlet type with forward-curved blades.
   c. The indoor fan system (blower wheels, motors, belts, and both bearings) shall slide out for easy access.
   d. Fan motors shall be continuous operation, open drip-proof. Bearings shall be sealed, permanently lubricated ball-bearing type for longer life and lower maintenance.

2. Condenser Fan: Shall be of the direct-driven propeller type, with corrosion-resistant aluminum blades riveted to corrosion-resistant steel support. They shall be totally enclosed, thermally protected, and be of a shaft down design.

3. Induced-draft blower shall be of the direct-driven, single inlet, forward curved, centrifugal type. It shall be made from aluminized steel with a corrosion-resistant finish and shall be dynamically balanced.

E. Compressor(s):

1. Fully hermetic, scroll type with crankcase heaters, internal high-pressure and temperature protection.

2. Factory mounted on rubber grommets and internally spring mounted for vibration isolation.

3. Dual electrically and mechanically independent refrigerant circuits.

4. Provide extended 4 year warranty on compressors. Evaporator Coil:

F. Coils:

1. Standard evaporator coils shall have aluminum lanced plate fins mechanically bonded to seamless internally grooved copper tubes with all joints brazed.

2. Dual circuit shall have face-split type evaporator coils.

3. Condenser coils shall be continuous slab design to facilitate easy coil cleaning.

4. Coils shall be leak tested at 170 psig and pressure tested at 1875 psig.

5. Condenser Coils: Provide Thermoguard™ non VOC coating. Corrosion durability shall be confirmed through testing to be no less than 1000 hours salt spray per ASTM B117-90. Coil construction shall be aluminum or copper-fins mechanically bonded to copper tubes. Thermoguard™ coated aluminum or copper-fin coils shall provide protection in industrial and industrial and costal combined environments. Provide 10-year coating protection warranty.

G. Heating Section:

1. Induced-draft combustion type with energy saving direct-spark ignition system and redundant main gas valve with 2-stage capability on all 3-phase units.

2. Heat Exchanger:
   a. Optional stainless steel heat exchanger shall be of the tubular-section type, constructed of a minimum of 20-gauge type 409 stainless steel, including stainless steel tubes, vestibule plate, and collector box.
   b. Burners shall be of the in-slot type constructed of aluminum-coated steel.
   c. All gas piping shall enter the unit at a single location.
   d. All factory-installed orifices are for operation up to 2,000 feet of altitude.
   e. The integrated gas controller (IGC) board shall include gas heat operation fault notification using an LED (light emitting diode).
   f. Unit shall be equipped with anti-cycle protection with one short cycle on unit flame rollout switch or 4 continuous short cycles on the high-temperature limit switch. Fault indication shall be made using an LED.
   g. The IGC board shall contain algorithms that modify evaporator-fan operation to prevent future cycling on high-temperature limit switch.
   h. The LED shall be visible without removal of control box access panel.
   i. Gas burner tray, when disconnected, shall easily slide out for maintenance.

H. Refrigerant Components:

1. Each refrigerant circuit shall include:
   a. Thermostatic expansion valve (TXV) with removable power element.
   b. Solid core refrigerant filter driers.
   c. Gage port and connections on suction, discharge, and liquid lines.

I. Filter Section:

1. Standard filter section shall consist of factory-installed 2-in. thick (see schedule for Minimum MERV rating) pleated filters and shall be on a dedicated slide out track to easily facilitate access and replacement.

2. Filter section shall use standard size filters and be of common sizes within cabinet sizes.

J. Controls:

1. See Section 23 09 00:

K. Safeties:

1. Unit shall incorporate a solid-state compressor lockout which provides optimal reset capability at the space thermostat, should any of the following safety devices trip and shut off compressor:

2. Compressor lockout protection provided for either internal or external overload.

3. Low pressure protection.

4. Freeze protection (evaporator coil).

5. High –pressure protection (high pressure switch or internal).

6. Compressor(s) reverse rotation protection.

7. Loss of charge protection.

8. Start assist on single-phase units.

9. Supply air sensor shall be located in the unit and detect both heating and cooling operation.

10. Induced draft heating section shall be provided with the following minimum protections:
    a. High-temperature limit switch.
    b. Induced-draft motor speed sensor.
    c. Flame rollout switch.
    d. Flame proving controls.
    e. Redundant gas valve.

L. Operating Characteristics:

1. Unit shall be capable of starting and running at 125^0F ambient outdoor temperature per maximum load criteria of ARI Standard 210 sizes and 360 sizes.

2. Unit shall be provided with fan time delay to prevent cold air delivery in heating mode.

M. Electrical Requirements: All unit power wiring shall enter cabinet at a single location through bottom.

N. Motors:

1. Compressor motors shall be cooled by refrigerant gas passing through motor windings and shall have line break thermal and current overload protection.

2. Evaporator fan motor shall have permanently lubricate, sealed bearings and inherent automatic-reset thermal overload protection or manual reset calibrated circuit breakers. Evaporator motors are designed specifically for Carrier and do not have conventional horsepower (HP) ratings listed on the motor nameplate. Motors are designed and qualified in the “air-over” location downstream of the cooling coil and carry a maximum continuous bhp rating that is the maximum application bhp rating for the motor; no “safety factors” above that rating may be applied.

3. All evaporator fan motors 5 hp and larger shall meet the minimum efficiency requirements as established by the Energy Policy Act of 1992 (EPACT), effective October 24, 1997.

4. Totally enclosed condenser-fan motor shall have permanently lubricated, sealed bearings, and inherent automatic-reset thermal overload protection.

5. Induced-draft motor shall have permanently lubricated sealed bearings, and inherent automatic-reset thermal overload protection.

O. Special Features:

1. Full Perimeter Isolation roof Curbs (Vertical):
   a. Formed of 14-gauge galvanized steel with wood nailer strip and shall be capable of supporting entire unit weight. Shall be interlocking design.
   b. Permits installing and securing ductwork to curb prior to mounting unit on the curb. Field assembly required.
   c. Shall be available in both 14-in.height.
   d. Provide two-inch isolation curbs where indicated on schedules. See details for specifications.

2. Integrated air Economizer (See schedule):
   a. Tilt-out economizer shall be furnished and installed complete with outside air dampers and controls.
   b. Low-leakage damper, opposing, gear-driven dampers with UL gears.
   c. Capable of introducing up to 100% outdoor air for minimum ventilation as well as free cooling.
   d. Damper actuator shall be electronic 4 to 20 mA / 2 to 10 vDC fully modulating design.
   e. Economizer outdoor hood shall be pre-painted and fully assembled on 3-14 size. Economizer outdoor hood requires field assembly on the other sizes.
   f. Economizer shall be available for either field or factory installation.

3. Power Exhaust (For economizers):
   a. Provide centrifugal exhaust fans field or factory-wired, VFD direct-drive motor on each, and damper for units with economizer to control over-pressurization of building. Size and quantity shall match unit size as recommended by manufacturer
   b. Power exhaust shall fit on both vertical and horizontal configured unit.
   c. Power exhaust shall be available for either field or factory installation.

4. Differential Enthalpy sensor:
   a. For use with air economizer only.
   b. Capable of comparing heat content (temperature and humidity) of outdoor air and indoor air and controlling economizer cut-in point at the most economical level.

5. Non-fused disconnect Switch: Shall be factory-installed, internally mounted, NEC and UL approved. Non-fuse switch shall provide unit power shutoff. Shall be accessible from outside the unit and shall provide power off lockout capability.

6. HACR Circuit Breaker: Shall be factory-installed, internally mounted, NEC and UL approved. HACR breaker shall provide unit power shutoff. Shall be accessible from outside the unit and shall provide power off lockout capability.

7. Fan Status: The fan status switch shall be a pressure switch and will indicate indoor fan operation. The switch shall be available as field or factory-installed.

8. MERV-13 Pleated Return Air Filters: The filters shall be MERV-13 efficient.

9. Mid-Low Fan Performance Motor/Drive: This motor/drive option shall provide low to medium motor and drive capability to enhance evaporator fan performance.

10. Phase Loss Protection: Shall provide shutdown when an electrical phase loss is detected.

11. Condensate Overflow Switch: Shall send a signal or stop operation of the unit if condensate drains or pipes are restricted. Shall be externally mounted and field wired.

12. Gas Heat NOx Reduction:
    a. NOx reduction shall be provided to reduce nitrous oxide emissions to meet the California Air Quality Management NOx requirement of 40 nanograms/joule of less.
    b. Primary tubes on low NOx units shall be 409 stainless steel. Other components shall be aluminized steel.

2.03 GRAVITY VENTILATORS

A. General: Unit shall be a hooded aluminum, roof mounted gravity intake ventilator.

B. Construction: The unit shall be of bolted and welded construction utilizing corrosion resistant fasteners. The aluminum hood shall be constructed of minimum 14 gauge marine alloy aluminum, bolted to a minimum 8 gauge aluminum support structure. The aluminum base shall have continuously welded curb cap corners for maximum leak protection. Bird screen constructed of ½" mesh shall be mounted across the intake opening. Unit shall bear an engraved aluminum nameplate and shall be shipped in ISTA certified transit-tested packaging. The counter-balanced relief or intake damper shall be provided where indicated.

2.04 SCREENS

A. Provide removable bird screens on all outside air intakes and exhaust air discharges to outside air. Screen shall be secured in frames of same materials as duct, hood or equivalent to which attached.

B. Screens for louvers provided under other Divisions of the specifications are not included under this section.

2.05 CONTROLS

A. See plans for control scope

B. The Mechanical Contractor shall be responsible for the proper coordination of all control work and electrical work in connection therewith. Contractor shall also be responsible for the proper operation of the entire system.

C. The Electrical Contractor shall furnish and install all line voltage control wiring, and all conduit. Wire sizing and length of run shall be coordinated with the manufacturer and Electrical Engineer.

D. Electrical Work: All electric relays, hand-off automatic switches and all electrical wiring and all conduit will be provided under the Electrical Section, except as otherwise specified. Furnish and install additional conduit, wiring, relays, and hand-off-automatic switches made necessary by the use of approved substituted equipment under this Section with no additional cost to the Owner.

E. Refer to drawings for control diagrams and additional requirements.

F. Where stand-alone controls are indicated, mechanical contractor shall be responsible for low voltage controls conduit, wiring, and thermostat.

PART 3 - EXECUTION

3.01 GENERAL

A. Install all equipment in locations indicated on the Drawings. Contractor will be responsible to verify with the District, if suitability is doubted. Contractor shall notify the District before installation into any apparent improper locations of interference with other work such as electrical outlets, windows, cabinetwork or other features.

3.02 INSPECTION

A. Roof-top equipment: Install in accordance with manufacturer's instructions. Mount units on factory built roof-mounting frame providing watertight enclosure to protect ductwork and utility services, or on platforms. Install roof mounting frame level.

B. All equipment shall be installed meeting strict conformance with manufacturer’s recommendations. All equipment shall be installed level and plumb. Fan and motors shall be anchored-bolted to a concrete pad or suspended or wall mounted as shown on Contract Drawings. Only cast in place anchors shall be used for fan installation. Fans will be grounded as recommended by the manufacturer.

C. Verify that the mechanical system may be installed in complete accordance with all pertinent codes and regulations and the approved shop drawings.

3.03 INSTALLATION OF EQUIPMENT

A. Install all equipment in the locations indicated on the approved shop drawings.

B. Avoid interference with structure and with work of other trades, preserving adequate headroom and clearing all doors and passageways.

C. Check each piece of equipment in the system for defects, verifying that all parts are properly furnished and installed, that all items function properly and that all adjustments have been made.

D. All mechanical equipment (fans, ductwork, piping, etc.) shall be isolated from the building structure by means of noise and vibration isolators. No rigid contact shall be allowed between pipes or ducts and building structures or support frames.

E. The gaps between penetrating elements, ductwork, piping and the walls of the holes shall be filled on all sides with resilient material and sealed air tight on each wall with non-hardening sealant. Provide sheet metal and collar at all exposed ductwork penetrations. Duct collar shall cover the annular space around the duct with a minimum 1” overlap.

F. Fabricate, with steel, special mounting brackets as required to clear other equipment, doors and to span for best structural support of mechanical.

G. All duct connections to mechanical equipment shall be made with flexible connectors.

H. Install equipment so that nameplates are easily visible.

I. Where not otherwise indicated, equipment and material installation is published manufactures' recommendations. This requirement includes details, clearances and accessories.

3.04 CUTTING, PATCHING AND DAMAGE

A. All necessary cutting and patching of walls, floors, partitions, ceilings, etc., as required for the proper installation of work under this section shall be done under this section. No cutting of structural members will be permitted without the written permission of the Architect.

B. Any existing work or equipment damaged during the progress of construction or testing shall be replaced with like material, free of charge to the School District or other trades.

3.05 DISCREPANCIES

A. In the event of discrepancy, immediately notify the Architect.

B. Do not proceed with the installation in areas of discrepancies until all such discrepancies have been fully resolved.

3.06 AIR OUTLETS

A. Install inclined blade return and exhaust grilles and registers so that blades obstruct vision by inclining blades as follows:

1. Ceiling Outlets: Incline toward nearest wall.

2. Wall Outlets near Ceiling: Incline toward ceiling.

3. Wall outlets near Floor: Incline toward floor.

B. Adjust throw-patterns of all supply air outlets to result in uniform, draft free room air distribution at minimum and maximum air flows.

3.07 FILTERS

A. Do not operate air supply system unless filters are installed, including temporary pre-filters for use during construction. If not used, deliver the spare set to the Owner at the time of acceptance.

B. Install new filters at final inspection concurrently with turn over to Owner.

3.08 AIR BALANCING

A. Refer to Section 23 05 93.

3.09 SOUND AND VIBRATION ISOLATION

A. All vibrating equipment shall be sound isolated from the structure.

B. The Contractor shall submit all necessary data for each vibration isolator, including static deflection and weight loading, for equipment in operation.

C. All vibrating equipment shall be provided with flexible pipe connections. Submit for approval prior to installation.

3.10 CLEANING

A. Completely cover motor and other moving machinery to protect from dirt and water during construction. Cap all openings into ducts and pipes to protect from foreign matter while under construction.

B. During the process of work, premises shall be kept reasonably free of all debris, cuttings and waste material resulting from work under this heading. All debris, rubbish, leftover material tools and equipment shall be removed from the site prior to final acceptance.

C. Thoroughly clean all parts of apparatus and equipment. Exposed parts which will be painted shall be thoroughly cleaned of cement, plaster and other materials. All grease or oil spots shall be removed with carbon tetrachloride. Such surfaces shall be carefully brushed down with a wire brush to remove rust and other spots and left smooth and clean.

D. Damaged factory applied finished shall be “touched up”. “Touched up” shall be accomplished with preparation, prime and finish coats applied in strict accordance with manufactures recommendations.

3.11 EQUIPMENT IDENTIFICATION AND OPERATION INSTRUCTIONS

A. Furnish the Owner with a hard bound brochure titled “Mechanical System” which shall contain the following information typed, indexed, tabbed and bound inside:

1. An alphabetical list of all equipment excepting pipe and fittings: the manufacture; the catalog number; and the local distributing agent, including his address and telephone number.

2. Manufacturer’s instructions for all items requiring maintenance. This shall include, but not be limited to, all motor driven equipment, controls, pressure regulating devices, packaged equipment, etc. Where manufacturer’s directions are not clear, are incomplete or do not exist, develop information necessary to service, clean, adjust, etc., all items. Delete all information in manufacturer’s literature, which is not applicable. Identify all equipment in the manual. List the time intervals that all maintenance tasks should be performed.

3. Submit three (3) copies of the brochure to the Architect for approval and furnish the Owner with at least two (2) corrected brochures.

4. Provide for and fasten to each piece of equipment a permanent name plate fabricated of engraved laminated plastic, white between black laminations, indicating the identifying mark and the area or spaces served by the equipment.

END OF SECTION